



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
OFFICE OF RESEARCH AND DEVELOPMENT  
RESEARCH TRIANGLE PARK, NC 27711

MEMORANDUM

Date: 15 October 2001

Subject: Re-Analyses of Perchlorate Hormone Data from the 1998 ERD

From: Kevin M. Crofton, Ph.D.   
Neurotoxicology Division, MD-74B  
National Health Effects and Environmental Research Laboratory

and

Allan Marcus, Ph.D.   
National Center for Environmental Assessment, MD-52

To: Annie M. Jarabek  
National Center for Environmental Assessment, MD-52

This memo contains our report on the re-analyses of the hormone data that was previously analyzed and presented in the 1998 External Review Draft (ERD) (US EPA, 1998).

Dr. Joseph Haseman, the statistician who served on the 1999 peer-review panel of the ERD criticized some of the original analyses for a number of short-comings (Research Triangle Institute, 1999). We have listed the major comments in Table 1, along with the actions taken to address them. The remainder of this report highlights the approach taken to address the comments on the previous statistical analyses. There are also appendices with the SAS code and output for the new statistical analyses, and a table that compares NOAELs and LOAELs from both the old and new analyses. The External Peer Review also identified some typos and problems with the graphic legends that will need to be addressed in the revised assessment report.

Please note that the data analyzed herein are the same as was previously used in the 1998 ERD (see Crofton, 1998a-f), with two exceptions:

1. Data for the T3 values from the mouse subchronic study, that were not available at the time of the previous analyses, have now been analyzed.
2. In the mouse subchronic study one value for TSH on PND 90 was deemed by the study author to be erroneous due to experimental error. This value was not included in the current analyses. Note that exclusion of this value did not change the NOAEL for this

endpoint in this study.

The set of 1998 data in this re-analysis thus includes the following studies. The output for each can be found in the accompanying appendices. We have also attached the SAS code from all of the re-analyses (Attachments 1-8).

1. Rat Developmental Neurotoxicity (Argus, 1998a): Thyroid lumen morphometry
2. Rat Developmental Neurotoxicity (Argus, 1998a): Hormone analyses
3. Rat Subchronic Study (Springborn Laboratories, 1998): T4 analyses
4. Rat Subchronic Study (Springborn Laboratories, 1998): T3 analyses
5. Rat Subchronic Study (Springborn Laboratories, 1998): TSH analyses
6. Rat 14-day Study (Caldwell et al., 1995): Hormone analyses
7. Mouse 90-day study (Keil et al., 1998): Hormone analyses
8. Rabbit Developmental Toxicity Study (Argus, 1998b): Hormone analyses

### **Statistical Approach - Criticisms and Response**

The major problem identified in the original reports was that the previous EPA ANOVA analyses (Crofton, 1998a-f) pooled significant main effects with the error term when comparing dose groups. This approach increases the mean square error value, which will decrease the likelihood of detecting significant differences between group means. Thus, possibly, increasing the dose associated with a significant effect compared to controls.

We agreed upon the following approaches to address this criticism:

- 1) **“Conservative” approach:** This is referred to as “conservative” because in a risk assessment context, it usually represents the most public health protective approach. The “conservative” approach uses a standard ANOVA model for factorial designs. The main effects and interaction mean squares are compared to an error mean square which is calculated from fitting the ‘full model’,  $y = \text{TRT} | \text{BLOCK} | \text{GENDER}$  with residuals including all main effects and interactions, whether or not they are significant. Since the null hypotheses are specified *a priori*, the nominal P-values and confidence levels should accurately characterize the uncertainty of the estimated dose effects, and by implication should validate the groupings in the Duncan procedure from which NOAEL and LOAEL may be derived.
- 2) **“Liberal” approach:** The “liberal” approach also starts with a standard ANOVA model for factorial designs,  $y = \text{TRT} | \text{BLOCK} | \text{GENDER}$ . The main effects and interaction mean squares are compared to an error mean square which is calculated from the ‘full model’ residuals including all main effects and interactions, whether or not they are significant. The model is then refit if non-significant interaction terms or even main effects are found. A smaller model is then fitted to the data, retaining only main effects and interactions previously found significant. The contribution of the non-significant effects removed from the second-stage model are added to the residual sum of squares in the denominator, as are the corresponding degrees of freedom of the effects removed to

the residual d.f.

We have used these two approaches for all of the re-analyses where appropriate. Important to note is that these two approaches, while resulting in slightly different mean square error terms, did not lead to any different conclusions in the mean contrast tests (Marcus, 2001). Table 2 presents a comparison of the NOAELs and LOAELs from the previous 1998 analyses and the current re-analyses. Since the two statistical approaches outlined above did not result in any differences in mean contrasts, only one column for the new results is presented. Results from the new analyses, where different from the old, are highlighted in Table 2.

## References

- Argus Research Laboratories, Inc. (1998a) A neurobehavioral developmental study of ammonium perchlorate administered orally in drinking water to rats [report amendment: July 27]. Horsham, PA: Argus Research Laboratories, Inc.; protocol report no. 1613-002.
- Argus Research Laboratories, Inc. (1998b) Oral (drinking water) developmental toxicity study of ammonium perchlorate in rabbits [report amendment: September 10]. Horsham, PA: Argus Research Laboratories, Inc.; protocol report no. 1416-002.
- Caldwell, D. J.; King, J. H., Jr.; Kinkead, E. R.; Wolfe, R. E.; Narayanan, L.; Mattie, D. R. (1995) Results of a fourteen day oral-dosing toxicity study of ammonium perchlorate. In: Proceedings of the 1995 JANNAF safety and environmental protection subcommittee meeting: volume 1; December; Tampa, FL. Columbia, MD: Chemical Propulsion Information Agency; Joint Army, Navy, NASA, Air Force (JANNAF) interagency propulsion committee publication 634.
- Crofton, K. M. (1998a) Analysis and graphics of thyroid hormone data from the rat 14-day "Caldwell" perchlorate study [memorandum with attachment to Annie Jarabek]. Research Triangle Park, NC: U.S. Environmental Protection Agency, Office of Research and Development; October 18 (revised November 21).
- Crofton, K. M. (1998b) Re-analysis of thyroid hormone data from the subchronic perchlorate study submitted by Springborn Laboratories (SLI study no. 3455.1) [memorandum with attachment to Annie Jarabek]. Research Triangle Park, NC: U.S. Environmental Protection Agency, Office of Research and Development; July 21 (revised October 12 and November 18).
- Crofton, K. M. (1998c) Analysis of the thyroid histology data from the rat developmental neurotoxicology study [memorandum with attachment to Annie Jarabek]. Research Triangle Park, NC: U.S. Environmental Protection Agency, Office of Research and Development; October 22 (revised November 6).
- Crofton, K. M. (1998d) Analysis of the thyroid hormone data from the rat developmental neurotoxicology study [memorandum with attachment to Annie Jarabek]. Research Triangle Park, NC: U.S. Environmental Protection Agency, Office of Research and Development; September 24 (revised November 6).
- Crofton, K. M. (1998e) Analysis and graphics of thyroid hormone data from the rabbit developmental perchlorate study [memorandum with attachment to Annie Jarabek]. Research Triangle Park, NC: U.S. Environmental Protection Agency, Office of Research and Development; October 10 (revised October 28).
- Crofton, K. M. (1998f) Analysis and graphics of thyroid hormone data from the mouse immunotoxicology study [memorandum with attachment to Annie Jarabek]. Research Triangle Park, NC: U.S. Environmental Protection Agency, Office of Research and Development; October 18 (revised November 10 and 23).

- Keil, D.; Warren, A.; Bullard-Dillard, R.; Jenny, M.; EuDaly, J. (1998) Effects of ammonium perchlorate on immunological, hematological, and thyroid parameters. Charleston, SC: Medical University of South Carolina, Department of Medical Laboratory Sciences; report no. DSWA01-97-1-008.
- Marcus, A. (2001). Explanation of Re-analyses of Perchlorate Hormone Data from the 1998 ERD [memorandum to Annie Jarabek and Kevin Crofton]. Research Triangle Park, NC: U.S. Environmental Protection Agency, National Center for Environmental Assessment. October 19.
- Research Triangle Institute. 1999. Perchlorate peer review workshop report. Washington, DC: U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response; contract no. 68-W98-085.
- Springborn Laboratories, Inc. (1998) A 90-day drinking water toxicity study in rats with ammonium perchlorate: amended final report [amended study completion date: June 3]. Spencerville, OH: Springborn Laboratories, Inc.; study no. 3455.1.

**Table 1. Changes to Original Reports in Response to Peer Review**

Data Set	Reference	Endpoint	Peer Review Comments	Changes/Response
RAT DNT	Argus (1998a)	Lumen Size	The legend in Figure 5-10 does not match the data in the graph.	This needs to be corrected in the revised assessment document.
			ANOVA incorrectly pools the 'block' sum of squares into the error term	The analysis has been re-run to correct this problem.
			Unclear which mean contrast tests is being used: Tukey's vs Duncan's	Re-analysis uses Duncan's for all mean contrasts.
			PND90 data not analyzed	PND90 data is now included in the analysis
		T3	The legend in Figure 5-11 does not match the data in the graph.	This needs to be corrected in the revised assessment document
			F-statistics incorrect in Figure 5-11	All F-statistics have been removed from the figures.
			Conservative adjustment of the p-value is not needed.	Adjustment not used in re-analyses.
		T4	The legend in Figure 5-12 does not match the data in the graph.	This needs to be corrected in the revised assessment document
			Conservative adjustment of the p-value is not needed.	Adjustment not used in re-analyses.
			Suggested use of Protected Fisher's LSD test	Used Duncan's for all mean contrasts. (Note: The use of Duncan's resulted in the same LOAEL as Protected Fisher's LSD).
		TSH	The legend in Figure 5-13 does not match the data in the graph.	This needs to be corrected in the revised assessment document.

Table 1 (con't)

Data Set	Reference	Endpoint	Peer Review Comments	Changes/Response
RAT 90-Day	Springborn (1998)	General	Data printout did not contain raw data	Printout now contains raw data
			Summary statistics are not the same between EPA and Springborn report	Hormone data from the 90-day study was provided by WPAFB personnel. EPA pointed out a number of inconsistencies in the data report (e.g., inconsistent animal and treatment codes. The corrected data, approved by Dave Mattie (WPAFB) was used in the EPA report.
		T3	The legend in Figure 5-6 does not match the data in the graph.	The graphic in the original report memo was correct. This was a recurring problem caused by document processing. This needs to be corrected in the final assessment document.
			Mean values in report for the 0.05 and 0.2 dose groups have been interchanged	New graphics have corrected values.
			Figure 5-6 does not have letters for mean contrast results for female data	Corrected in new graphics
		T4	ANOVA incorrectly pools the 'gender' sum of squares into the error term	The analysis has been re-run to correct this problem.
			Plot data for males and females separately	Done
			Suggested separate ANOVAs for each Day.	Done.
		TSH	The legend in Figure 5-9 does not match the data in the graph.	This needs to be corrected in the revised assessment document.
			ANOVA incorrectly pools the 'gender' sum of squares into the error term	The analysis has been re-run to correct this problem.
			NOAEL is not not 0.05. The lowest dose is the LOAEL	Agree: new analysis suggest no NOAEL and an LOAEL of 0.01.

Table 1 (con't)

Data Set	Reference	Endpoint	Peer Review Comments	Changes/Response
Rat 14-Day	Caldwell et al. (1995)	T4	ANOVA incorrectly pools the 'gender' sum of squares into the error term	The analysis has been re-run to correct this problem.
		TSH	The legend in Figure 5-2 does not match the data in the graph.	This needs to be corrected in the revised assessment document.
		rT3	NOAEL cannot be 0.17 as listed in EPA report	The NOAEL was incorrectly typed as 0.17 instead of 0.47
			The legend in Figure 5-3 does not match the data in the graph.	This needs to be corrected in the revised assessment document..
Mouse 90-Day	Keil et al. (1998)	General	No problems were identified.	To be consistent with the other analyses, this data was re-analyzed using Duncan's instead of Tukey's
Rabbit Teratology	Argus (1998b)	T3, T4, TSH	The legend in Figure 5-15 does not match the data in the graph.	This needs to be corrected in the revised assessment document.
			The legend in Figure 5-16 does not match the data in the graph.	This needs to be corrected in the revised assessment document..
			Conservative adjustment of the p-value is not needed.	Adjustment not used in re-analyses.
			The meaning of the phrase "interaction main effect" is unclear	Word processing error. Fixed.
			Unclear which mean contrast tests is being used: Tukey's vs Duncan's	Duncan's was used for all mean contrasts.

Table 2. A Comparison of NOAELs and LOAELs from the original analyses and the re-analyses.

Species/Study	Time Point, Age, (Doses, mg/kg/day)	Endpoint	Sex	Original Analyses		Re-Analyses <sup>1</sup>	
				NOAEL	LOAEL	NOAEL	LOAEL
Rat 14-Day (Caldwell et al., 1995)	14-Day (males - 0.0, 0.11, 0.44, 1.11, 2.26, 4.32, 11.44, 22.16) (females - 0.0, 0.12, 0.47, 1.23, 3.06, 4.91, 11.47, 24.86)	T3	M	0.11	0.44	0.11	0.44
			F	-	0.11	-	0.12
		T4	M	-	0.11	-	0.11
			F		0.12		0.12
		TSH	M	0.44	1.11	0.44	1.11
			F	0.12	0.47	-	<b>0.12</b>
		hTg	M	-	0.11	-	0.11
			F	-	0.12	-	0.12
		rT3	M	0.44 0.47	1.11	<b>0.11</b>	0.44
			F		1.23	<b>0.12</b>	0.47

Table 2. (con't)

Species/Study	Time Point, Age, (Doses, mg/kg/day)	Endpoint	Sex	Original Analyses		Re-Analyses <sup>1</sup>	
				NOAEL	LOAEL	NOAEL	LOAEL
Rat 90-Day (Springborn, 1998)	14-Day (0, 0.01, 0.05, 0.2, 1.0, 10.0)	T3	M	-	0.01	-	0.01
			F	10.0	-	10.0	-
		T4	M	1.0	10.0	-	0.05
			F			-	
		TSH	M	0.05	0.2	0.01	0.05
			F	0.01	0.05	-	0.01
	90-Day (0, 0.01, 0.05, 0.2, 1.0, 10.0)	T3	M	-	0.01	-	0.01
			F	-	0.01	-	0.01
		T4	M	-	0.01	-	0.01
			F			-	0.01
		TSH	M	0.05	0.2	0.05	0.2
			F			-	
Rat Developmental Neurotoxicity Study (Argus, 1998a)	120-Day (0, 0.05, 1.0, 10.0)	T3	M	1.0	10.0	1.0	10.0
			F			-	
		T4	M	-	0.05	-	0.05
			F			1.0	10.0
		TSH	M	10.0	-	-	0.05
			F			-	
		Lumen size	M	1	3	0.3	3
			F			-	

Table 2. (con't)

Page 10 of 218

Species/Study	Time Point, Age, (Doses, mg/kg/day)	Endpoint	Sex	Original Analyses		Re-Analyses <sup>1</sup>	
				NOAEL	LOAEL	NOAEL	LOAEL
	PND90 (0, 0.1, 1.0, 3.0, 10.0)	Lumen size	M	Data not available for original analyses		10	-
			F			10	-
	PND5 (0, 0.1, 1.0, 3.0, 10.0)	T4		1.0	3.0	0.1	1.0
		T3		0.1	1.0	0.1	1.0
		TSH		3.0	10.0	3.0	10.0
	PND90			No data available			

Table 2. (con't)

Page 11 of 218

Species/Study	Time Point, Age, (Doses, mg/kg/day)	Endpoint	Sex	Original Analyses		Re-Analyses <sup>1</sup>	
				NOAEL	LOAEL	NOAEL	LOAEL
Mouse Hormone and Immunotoxicity (Keil et al., 1998)	14-Day (0.0, 0.1, 1.0, 3.0, 30)	M	T4	3.0	30.0	-	0.1
		M	T3	Data not available at time of analysis		30.0	-
		M	TSH	no data			
	90-Day (0.0, 0.1, 1.0, 3.0, 30)	M	T4	0.1	3.0	-	0.1
		M	T3	Data not available at time of analysis		-	0.1*
		M	TSH	30.0	-	-	0.1**
	120-Day (0.0, 0.1, 1.0, 3.0, 30)	M	T4	30.0	-	30.0	-
		M	T3	Data not available at time of analysis		30.0	-
		M	TSH	30.0	-	30.0	-
Rabbit Developmental Toxicity (Argus, 1998b)	Gestation Day 28 (0.0, 0.1, 1.0, 10.0, 30.0, 100.0)	F	T4	0.1	1.0	0.1	1.0
		F	T3	100	-	100	-
		F	TSH	100	-	100	-

1 - Results from the liberal and conservative statistical approaches were the same.

Notes for Mouse Data:

\* No dose response - 0.1 and 3.0 differ from control; 1.0 and 30.0 do not differ from control.

\*\* No dose response - 0.1 and 1.0 differ from control; 0.3 and 30.0 do not differ from control.

## List of Appendices

1. Rat Developmental Neurotoxicity Study (Argus, 1998a) - Thyroid Lumen Linear Measurements .....	13
2. Rat Developmental Neurotoxicity Study (Argus, 1998a) - Hormone Analyses .....	33
3. Rat Subchronic Study (Springborn Laboratories, 1998) - T4 .....	42
4. Rat Subchronic Study (Springborn Laboratories, 1998) - T3 .....	71
5. Rat Subchronic Study (Springborn Laboratories, 1998) - TSH .....	101
6. Rat 14-Day Study (Caldwell et al, 1995) - Hormone Analyses .....	134
7. Mouse 90-Day Study (Keil et al., 1998) - Hormone Analyses .....	161
8. Rabbit Developmental Toxicity Study (Argus, 1998b) - Hormone Analyses .....	197

## APPENDIX 1

### Rat Developmental Neurotoxicity Study Thyroid Lumen Linear Measurements

Reference: Argus Research Laboratories, Inc. (1998a) A neurobehavioral developmental study of ammonium perchlorate administered orally in drinking water to rats [report amendment: July 27]. Horsham, PA: Argus Research Laboratories, Inc.; protocol report no. 1613-002.

11

The SAS System

18:37 Tuesday, August 28, 2001

NOTE: Copyright (c) 1989-1996 by SAS Institute Inc., Cary, NC, USA.  
NOTE: SAS (r) Proprietary Software Release 6.12 TS020  
Licensed to US ENVIRONMENTAL PROTECTION AGENCY, Site 0019614059.

NOTE: Running on ALPHASERVER Model 2100 5/300 Serial Number 80000000.

Welcome to the NHEERL-RTP SAS Information Delivery System.

```
1      *THIS FILE IS HRLSAS [CROFTON.THYROID.PERCHLORATE] PERCHLORATE_DNT_THYROID_LUMEN.SAS ;
2      *   SAS CODE TO ANALYZE THYROID LUMEN MORPHOMETRIC DATA FROM;
3      *   WPAFB-ARGUS DEVELOPMENTAL NEUROTOX STUDY OF PERCHLORATE;
4
5      *INPUT DATA FROM PND5;
6      DATA NEW5; INFILE '[CROFTON.THYROID.PERCHLORATE] PERCHLORATE_PND5_THYROID_MORPHOMETRICS.TXT';
7          INPUT ANIM$ GENDER$ BLOCK DOSE AREA;
8
9      *CREATE AGE VARIABLE;
10     IF AREA GT 1 THEN AGE = 5;
11
12
```

NOTE: The infile '[CROFTON.THYROID.PERCHLORATE] PERCHLORATE\_PND5\_THYROID\_MORPHOMETRICS.TXT' is:  
File=DSA21:[SAS\$USERS.CROFTON.THYROID.PERCHLORATE] PERCHLORATE\_PND5\_THYROID\_MORPHOMETRICS.TXT

NOTE: 100 records were read from the infile '[CROFTON.THYROID.PERCHLORATE] PERCHLORATE\_PND5\_THYROID\_MORPHOMETRICS.TXT'.  
The minimum record length was 43.  
The maximum record length was 43.

NOTE: The data set WORK.NEW5 has 100 observations and 6 variables.

```
12      PROC SORT; BY ANIM GENDER DOSE BLOCK;
13
```

NOTE: The data set WORK.NEW5 has 100 observations and 6 variables.

```
13      PROC PRINT;
14
15
16
17      *INPUT DATA FROM PND90;
```

NOTE: The PROCEDURE PRINT printed pages 1-2.

```
18      DATA NEW90; INFILE '[CROFTON.THYROID.PERCHLORATE] PERCHLORATE_PND90_THYROID_MORPHOMETRICS.TXT';
19          INPUT ANIM$ DOSE GENDER$ AREA;
20
21      *ADD DUMMY VARIABLE FOR BLOCK;
22          IF AREA GT 1 THEN BLOCK = 1;
23
24      *CREATE AGE VARIABLE;
25          IF AREA GT 1 THEN AGE = 90;
26
27
```

NOTE: The infile '[CROFTON.THYROID.PERCHLORATE] PERCHLORATE\_PND90\_THYROID\_MORPHOMETRICS.TXT' is:  
File=DSA21:[SAS\$USERS.CROFTON.THYROID.PERCHLORATE] PERCHLORATE\_PND90\_THYROID\_MORPHOMETRICS.TXT

12

The SAS System

18:37 Tuesday, August 28, 2001

NOTE: 60 records were read from the infile '[CROFTON.THYROID.PERCHLORATE] PERCHLORATE\_PND90\_THYROID\_MORPHOMETRICS.TXT'.  
The minimum record length was 33.  
The maximum record length was 35.  
NOTE: The data set WORK.NEW90 has 60 observations and 6 variables.

27 PROC SORT; BY ANIM GENDER DOSE BLOCK;  
28

NOTE: The data set WORK.NEW90 has 60 observations and 6 variables.

28 PROC PRINT;  
29  
30  
31 \*MERGE DATA SETS;

NOTE: The PROCEDURE PRINT printed pages 3-4.

32 DATA FINAL; MERGE NEWS NEW90;  
33 BY ANIM GENDER DOSE BLOCK;  
34  
35

NOTE: The data set WORK.FINAL has 160 observations and 6 variables.

35 PROC SORT; BY AGE DOSE;  
36

NOTE: The data set WORK.FINAL has 160 observations and 6 variables.

36 PROC PRINT;  
37  
38  
39

NOTE: The PROCEDURE PRINT printed pages 5-7.

39 PROC SORT; BY AGE DOSE;  
40

NOTE: Input data set is already sorted, no sorting done.

40 PROC MEANS N MEAN STDERR MIN MAX STD VAR CV;  
41 BY AGE DOSE;  
42 VAR AREA;  
43  
44

NOTE: The PROCEDURE MEANS printed pages 8-9.

44 PROC SORT; BY AGE BLOCK DOSE;  
45

NOTE: The data set WORK.FINAL has 160 observations and 6 variables.

```

45      PROC MEANS N MEAN STDERR MIN MAX STD VAR CV;
46          BY AGE BLOCK DOSE;
47          VAR AREA;
48
13                           The SAS System
49      *THERE IS ONLY ONE BLOCK OF ANIMALS IN THE 90 DAY STUDY AND THE SLIDES WERE;
50      * PROCESSED AT A MUCH LATER TIME - THEREFORE DATA FROM PND 5 AND PND 90;
51      * WILL BE ANALYZED SEPERATELY;
52
53
54
55      *ANALYSES FOR PND5 DATA;
56

```

18:37 Tuesday, August 28, 2001

NOTE: The PROCEDURE MEANS printed pages 10-12.

```

57      DATA PND5; SET FINAL;
58          IF AGE = 90 THEN DELETE;
59
60

```

NOTE: The data set WORK.PND5 has 100 observations and 6 variables.

```

60      PROC SORT; BY BLOCK DOSE GENDER;
61
62      *THIS IS STEP ONE - 3-Way ANOVA for Block, Dose and Gender;
63

```

NOTE: The data set WORK.PND5 has 100 observations and 6 variables.

```

63      PROC GLM;
64          CLASSES BLOCK DOSE GENDER;
65          MODEL AREA = BLOCK|DOSE|GENDER;
66              TITLE1 "ARGUS NEURODEVELOPMENTAL - THYROID LUMEN DATA - PND5";
67              TITLE2 "PROC GLM - MAIN EFFECTS AND INTERACTIONS";
68
69
70      *THIS IS STEP DOWN OPTION ONE - Test for main effects of dose with the residual mean;
71      *                     square from all main effects and interactions less than 0.05;
72

```

NOTE: The PROCEDURE GLM printed pages 13-14.

```

72      PROC GLM;
73          CLASSES DOSE BLOCK;
74          MODEL AREA = DOSE BLOCK;
75          MEANS DOSE/DUNCAN;
76              TITLE1 "ARGUS NEURODEVELOPMENTAL - THYROID LUMEN DATA - PND5";
77              TITLE2 "PROC GLM - STEP DOWN MAIN EFFECTS WITH DUNCANS";
78              TITLE3 "Liberal APPROACH";
79
80      *THIS IS STEPDOWN OPTION TWO - Test for main effects of dose with the residual mean;
81      *                     square from the full model Block|dose|gender;
82

```

NOTE: Means from the MEANS statement are not adjusted for other terms in the model. For adjusted means, use the LSMEANS statement.  
 NOTE: The PROCEDURE GLM printed pages 15-17.

```

82      PROC GLM;
83          CLASSES DOSE BLOCK GENDER;
84          MODEL AREA = DOSE|BLOCK|GENDER;
85          MEANS DOSE/DUNCAN;
86          TITLE1 "ARGUS NEURODEVELOPMENTAL - THYROID LUMEN DATA - PND5";
14          The SAS System                                18:37 Tuesday, August 28, 2001

87          TITLE2 "PROC GLM - STEP DOWN MAIN EFFECTS WITH DUNCANS";
88          TITLE3 "Conservative APPROACH";
89
90
91          *ANALYSES FOR PND90 DATA;
92

```

NOTE: Means from the MEANS statement are not adjusted for other terms in the model. For adjusted means, use the LSMEANS statement.  
 NOTE: The PROCEDURE GLM printed pages 18-20.

```

93      DATA PND90; SET FINAL;
94          IF AGE = 5 THEN DELETE;
95
96
97
98
99

```

NOTE: The data set WORK.PND90 has 60 observations and 6 variables.

```

96      PROC SORT; BY DOSE GENDER;
97
98      *THIS IS STEP ONE - 2-Way ANOVA for Dose and Gender;
99

```

NOTE: The data set WORK.PND90 has 60 observations and 6 variables.

```

99      PROC GLM;
100          CLASSES DOSE GENDER;
101          MODEL AREA = DOSE|GENDER;
102          TITLE1 "ARGUS NEURODEVELOPMENTAL - THYROID LUMEN DATA - PND90";
103          TITLE2 "PROC GLM - MAIN EFFECTS AND INTERACTIONS";
104
105      *SINCE THERE WAS NO MAIN EFFECT OF TREATMENT OR INTERACTIONS WITH TREATMENT;
106      * THIS IS THE END OF THE ANALYSIS;
107      ENDSAS;

```

NOTE: The PROCEDURE GLM printed pages 21-22.

NOTE: SAS Institute Inc., SAS Campus Drive, Cary, NC USA 27513-2414  
 1 The SAS System

18:37 Tuesday, August 28, 2001 1

OBS	ANIM	GENDER	BLOCK	DOSE	AREA	AGE
1	100A	M	1	0.0	257.78	5
2	101A	M	1	0.0	291.14	5
3	101B	F	1	0.0	364.20	5
4	102B	F	1	0.0	434.20	5
5	253	M	2	10.0	270.34	5

6	257	M	2	10.0	360.41	5
7	259	M	2	10.0	139.56	5
8	265	M	2	10.0	209.18	5
9	270	M	2	3.0	267.16	5
10	273	M	2	3.0	214.84	5
11	278	M	2	3.0	223.47	5
12	280	M	2	3.0	190.38	5
13	282	M	2	1.0	272.49	5
14	286	M	2	1.0	180.15	5
15	288	M	2	1.0	120.44	5
16	293	M	2	1.0	184.22	5
17	297	M	2	0.3	250.13	5
18	301	M	2	0.3	193.47	5
19	303	M	2	0.3	203.19	5
20	306	M	2	0.3	271.87	5
21	309	M	2	0.0	249.21	5
22	314	M	2	0.0	389.38	5
23	317	M	2	0.0	336.60	5
24	321	M	2	0.0	320.74	5
25	323	F	2	10.0	147.60	5
26	324	F	2	10.0	112.00	5
27	327	F	2	10.0	126.00	5
28	334	F	2	10.0	145.60	5
29	338	F	2	3.0	244.30	5
30	342	F	2	3.0	184.50	5
31	344	F	2	3.0	118.60	5
32	350	F	2	3.0	109.30	5
33	353	F	2	1.0	290.50	5
34	358	F	2	1.0	228.50	5
35	362	F	2	1.0	178.10	5
36	364	F	2	1.0	160.60	5
37	365	F	2	0.3	199.10	5
38	369	F	2	0.3	226.30	5
39	371	F	2	0.3	221.70	5
40	374	F	2	0.3	216.60	5
41	382	F	2	0.0	315.30	5
42	385	F	2	0.0	235.30	5
43	388	F	2	0.0	392.60	5
44	390	F	2	0.0	252.00	5
45	57A	M	1	10.0	115.60	5
46	58A	M	1	10.0	255.03	5
47	58B	F	1	10.0	499.80	5
48	59B	F	1	10.0	214.10	5
49	60A	M	1	10.0	163.76	5
50	61B	F	1	10.0	317.50	5
51	62A	M	1	10.0	143.46	5
52	63A	M	1	10.0	214.62	5
53	64B	F	1	10.0	183.50	5
54	65A	M	1	10.0	225.07	5
55	65B	F	1	10.0	244.40	5
56	66B	F	1	10.0	123.90	5

1

The SAS System

18:37 Tuesday, August 28, 2001 2

OBS	ANIM	GENDER	BLOCK	DOSE	AREA	AGE
57	67A	M	1	3.0	231.27	5
58	68A	M	1	3.0	191.71	5

59	68B	F	1	3.0	192.50	5
60	69A	M	1	3.0	276.06	5
61	70B	F	1	3.0	341.20	5
62	71A	M	1	3.0	208.06	5
63	71B	F	1	3.0	200.90	5
64	72A	M	1	3.0	124.28	5
65	72B	F	1	3.0	230.50	5
66	73B	F	1	3.0	561.80	5
67	74A	M	1	3.0	156.84	5
68	74B	F	1	3.0	172.30	5
69	75A	M	1	1.0	294.17	5
70	76A	M	1	1.0	285.03	5
71	77A	M	1	1.0	200.61	5
72	78B	F	1	1.0	248.30	5
73	79B	F	1	1.0	254.20	5
74	80A	M	1	1.0	379.11	5
75	80B	F	1	1.0	405.90	5
76	81B	F	1	1.0	212.10	5
77	82A	M	1	1.0	370.13	5
78	82B	F	1	1.0	228.90	5
79	83B	F	1	1.0	344.90	5
80	84A	M	1	1.0	621.46	5
81	85A	M	1	0.3	280.98	5
82	85B	F	1	0.3	256.60	5
83	86A	M	1	0.3	256.36	5
84	87A	M	1	0.3	261.67	5
85	87B	F	1	0.3	303.80	5
86	88B	F	1	0.3	285.00	5
87	89B	F	1	0.3	419.30	5
88	90A	M	1	0.3	303.47	5
89	91A	M	1	0.3	303.91	5
90	92A	M	1	0.3	225.23	5
91	93B	F	1	0.3	255.70	5
92	94B	F	1	0.3	262.70	5
93	95A	M	1	0.0	361.14	5
94	96A	M	1	0.0	375.25	5
95	96B	F	1	0.0	258.10	5
96	97A	M	1	0.0	307.62	5
97	97B	F	1	0.0	196.40	5
98	98A	M	1	0.0	261.20	5
99	98B	F	1	0.0	418.70	5
100	99B	F	1	0.0	339.80	5

1

The SAS System

18:37 Tuesday, August 28, 2001 3

OBS	ANIM	DOSE	GENDER	AREA	BLOCK	AGE
1	148A1	0.0	f	1395.65	1	90
2	149A1	0.0	f	526.79	1	90
3	150A1	0.0	f	1031.47	1	90
4	151A1	0.0	f	1482.64	1	90
5	152A1	0.0	f	2216.18	1	90
6	153A1	0.0	f	1095.35	1	90
7	154A1	0.1	f	898.17	1	90
8	155A1	0.1	f	401.58	1	90
9	156A1	0.1	f	1415.77	1	90
10	157A1	0.1	f	833.69	1	90
11	158A1	0.1	f	734.58	1	90

12	159A1	0.1	f	1584.45	1	90
13	160A1	1.0	f	1115.29	1	90
14	161A1	1.0	f	692.22	1	90
15	162A1	1.0	f	1049.32	1	90
16	163A1	1.0	f	935.78	1	90
17	164A1	1.0	f	1346.33	1	90
18	165A1	1.0	f	933.91	1	90
19	166A1	3.0	f	1153.38	1	90
20	167A1	3.0	f	687.33	1	90
21	168A1	3.0	f	690.04	1	90
22	169A1	3.0	f	679.63	1	90
23	170A1	3.0	f	1058.19	1	90
24	171A1	3.0	f	850.86	1	90
25	172A1	10.0	f	1166.24	1	90
26	173A1	10.0	f	854.35	1	90
27	174A1	10.0	f	655.98	1	90
28	175A1	10.0	f	1071.00	1	90
29	176A1	10.0	f	1073.08	1	90
30	177A1	10.0	f	2360.38	1	90
31	178B1	0.0	m	2187.86	1	90
32	179B1	0.0	m	1194.51	1	90
33	180B1	0.0	m	1145.27	1	90
34	181B1	0.0	m	1310.88	1	90
35	182B1	0.0	m	1007.47	1	90
36	183B1	0.0	m	1101.58	1	90
37	184B1	0.1	m	909.98	1	90
38	185B1	0.1	m	1004.01	1	90
39	186B1	0.1	m	1998.72	1	90
40	187B1	0.1	m	2104.11	1	90
41	188B1	0.1	m	724.09	1	90
42	189B1	0.1	m	821.97	1	90
43	190B1	1.0	m	1818.27	1	90
44	191B1	1.0	m	2460.06	1	90
45	192B1	1.0	m	2512.01	1	90
46	193B1	1.0	m	1386.24	1	90
47	194B1	1.0	m	1158.58	1	90
48	195B1	1.0	m	3285.41	1	90
49	196B1	3.0	m	860.99	1	90
50	197B1	3.0	m	1040.65	1	90
51	198B1	3.0	m	1227.10	1	90
52	199B1	3.0	m	1984.96	1	90
53	200B1	3.0	m	865.16	1	90
54	201B1	3.0	m	1093.39	1	90
55	202B1	10.0	m	1101.11	1	90
56	203B1	10.0	m	1788.56	1	90

The SAS System

18:37 Tuesday, August 28, 2001 4

OBS	ANIM	DOSE	GENDER	AREA	BLOCK	AGE
57	204B1	10	m	688.04	1	90
58	205B1	10	m	1542.93	1	90
59	206B1	10	m	1677.93	1	90
60	207B	10	m	2398.98	1	90

The SAS System

18:37 Tuesday, August 28, 2001 5

OBS	ANIM	GENDER	BLOCK	DOSE	AREA	AGE
-----	------	--------	-------	------	------	-----

1	100A	M	1	0.0	257.78	5
2	101A	M	1	0.0	291.14	5
3	101B	F	1	0.0	364.20	5
4	102B	F	1	0.0	434.20	5
5	309	M	2	0.0	249.21	5
6	314	M	2	0.0	389.38	5
7	317	M	2	0.0	336.60	5
8	321	M	2	0.0	320.74	5
9	382	F	2	0.0	315.30	5
10	385	F	2	0.0	235.30	5
11	388	F	2	0.0	392.60	5
12	390	F	2	0.0	252.00	5
13	95A	M	1	0.0	361.14	5
14	96A	M	1	0.0	375.25	5
15	96B	F	1	0.0	258.10	5
16	97A	M	1	0.0	307.62	5
17	97B	F	1	0.0	196.40	5
18	98A	M	1	0.0	261.20	5
19	98B	F	1	0.0	418.70	5
20	99B	F	1	0.0	339.80	5
21	297	M	2	0.3	250.13	5
22	301	M	2	0.3	193.47	5
23	303	M	2	0.3	203.19	5
24	306	M	2	0.3	271.87	5
25	365	F	2	0.3	199.10	5
26	369	F	2	0.3	226.30	5
27	371	F	2	0.3	221.70	5
28	374	F	2	0.3	216.60	5
29	85A	M	1	0.3	280.98	5
30	85B	F	1	0.3	256.60	5
31	86A	M	1	0.3	256.36	5
32	87A	M	1	0.3	261.67	5
33	87B	F	1	0.3	303.80	5
34	88B	F	1	0.3	285.00	5
35	89B	F	1	0.3	419.30	5
36	90A	M	1	0.3	303.47	5
37	91A	M	1	0.3	303.91	5
38	92A	M	1	0.3	225.23	5
39	93B	F	1	0.3	255.70	5
40	94B	F	1	0.3	262.70	5
41	282	M	2	1.0	272.49	5
42	286	M	2	1.0	180.15	5
43	288	M	2	1.0	120.44	5
44	293	M	2	1.0	184.22	5
45	353	F	2	1.0	290.50	5
46	358	F	2	1.0	228.50	5
47	362	F	2	1.0	178.10	5
48	364	F	2	1.0	160.60	5
49	75A	M	1	1.0	294.17	5
50	76A	M	1	1.0	285.03	5
51	77A	M	1	1.0	200.61	5
52	78B	F	1	1.0	248.30	5
53	79B	F	1	1.0	254.20	5
54	80A	M	1	1.0	379.11	5
55	80B	F	1	1.0	405.90	5
56	81B	F	1	1.0	212.10	5

OBS	ANIM	GENDER	BLOCK	DOSE	AREA	AGE
57	82A	M	1	1	370.13	5
58	82B	F	1	1	228.90	5
59	83B	F	1	1	344.90	5
60	84A	M	1	1	621.46	5
61	270	M	2	3	267.16	5
62	273	M	2	3	214.84	5
63	278	M	2	3	223.47	5
64	280	M	2	3	190.38	5
65	338	F	2	3	244.30	5
66	342	F	2	3	184.50	5
67	344	F	2	3	118.60	5
68	350	F	2	3	109.30	5
69	67A	M	1	3	231.27	5
70	68A	M	1	3	191.71	5
71	68B	F	1	3	192.50	5
72	69A	M	1	3	276.06	5
73	70B	F	1	3	341.20	5
74	71A	M	1	3	208.06	5
75	71B	F	1	3	200.90	5
76	72A	M	1	3	124.28	5
77	72B	F	1	3	230.50	5
78	73B	F	1	3	561.80	5
79	74A	M	1	3	156.84	5
80	74B	F	1	3	172.30	5
81	253	M	2	10	270.34	5
82	257	M	2	10	360.41	5
83	259	M	2	10	139.56	5
84	265	M	2	10	209.18	5
85	323	F	2	10	147.60	5
86	324	F	2	10	112.00	5
87	327	F	2	10	126.00	5
88	334	F	2	10	145.60	5
89	57A	M	1	10	115.60	5
90	58A	M	1	10	255.03	5
91	58B	F	1	10	499.80	5
92	59B	F	1	10	214.10	5
93	60A	M	1	10	163.76	5
94	61B	F	1	10	317.50	5
95	62A	M	1	10	143.46	5
96	63A	M	1	10	214.62	5
97	64B	F	1	10	183.50	5
98	65A	M	1	10	225.07	5
99	65B	F	1	10	244.40	5
100	66B	F	1	10	123.90	5
101	148A1	f	1	0	1395.65	90
102	149A1	f	1	0	526.79	90
103	150A1	f	1	0	1031.47	90
104	151A1	f	1	0	1482.64	90
105	152A1	f	1	0	2216.18	90
106	153A1	f	1	0	1095.35	90
107	178B1	m	1	0	2187.86	90
108	179B1	m	1	0	1194.51	90
109	180B1	m	1	0	1145.27	90
110	181B1	m	1	0	1310.88	90

1

111	182B1	m	1	0	1007.47	90		
112	183B1	m	1	0	1101.58	90		

The SAS System

18:37 Tuesday, August 28, 2001 7

OBS	ANIM	GENDER	BLOCK	DOSE	AREA	AGE
113	154A1	f	1	0.1	898.17	90
114	155A1	f	1	0.1	401.58	90
115	156A1	f	1	0.1	1415.77	90
116	157A1	f	1	0.1	833.69	90
117	158A1	f	1	0.1	734.58	90
118	159A1	f	1	0.1	1584.45	90
119	184B1	m	1	0.1	909.98	90
120	185B1	m	1	0.1	1004.01	90
121	186B1	m	1	0.1	1998.72	90
122	187B1	m	1	0.1	2104.11	90
123	188B1	m	1	0.1	724.09	90
124	189B1	m	1	0.1	821.97	90
125	160A1	f	1	1.0	1115.29	90
126	161A1	f	1	1.0	692.22	90
127	162A1	f	1	1.0	1049.32	90
128	163A1	f	1	1.0	935.78	90
129	164A1	f	1	1.0	1346.33	90
130	165A1	f	1	1.0	933.91	90
131	190B1	m	1	1.0	1818.27	90
132	191B1	m	1	1.0	2460.06	90
133	192B1	m	1	1.0	2512.01	90
134	193B1	m	1	1.0	1386.24	90
135	194B1	m	1	1.0	1158.58	90
136	195B1	m	1	1.0	3285.41	90
137	166A1	f	1	3.0	1153.38	90
138	167A1	f	1	3.0	687.33	90
139	168A1	f	1	3.0	690.04	90
140	169A1	f	1	3.0	679.63	90
141	170A1	f	1	3.0	1058.19	90
142	171A1	f	1	3.0	850.86	90
143	196B1	m	1	3.0	860.99	90
144	197B1	m	1	3.0	1040.65	90
145	198B1	m	1	3.0	1227.10	90
146	199B1	m	1	3.0	1984.96	90
147	200B1	m	1	3.0	865.16	90
148	201B1	m	1	3.0	1093.39	90
149	172A1	f	1	10.0	1166.24	90
150	173A1	f	1	10.0	854.35	90
151	174A1	f	1	10.0	655.98	90
152	175A1	f	1	10.0	1071.00	90
153	176A1	f	1	10.0	1073.08	90
154	177A1	f	1	10.0	2360.38	90
155	202B1	m	1	10.0	1101.11	90
156	203B1	m	1	10.0	1788.56	90
157	204B1	m	1	10.0	688.04	90
158	205B1	m	1	10.0	1542.93	90
159	206B1	m	1	10.0	1677.93	90
160	207B	m	1	10.0	2398.98	90

The SAS System

18:37 Tuesday, August 28, 2001 8

1

Analysis Variable : AREA

----- AGE=5 DOSE=0 -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
20	317.8330000	14.9028002	196.4000000	434.2000000	66.6473488	4441.87	20.9692979

----- AGE=5 DOSE=0.3 -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
20	259.8540000	11.4163555	193.4700000	419.3000000	51.0554937	2606.66	19.6477613

----- AGE=5 DOSE=1 -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
20	272.9905000	25.1889912	120.4400000	621.4600000	112.6485932	12689.71	41.2646569

----- AGE=5 DOSE=3 -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
20	221.9985000	21.7542975	109.3000000	561.8000000	97.2881760	9464.99	43.8237988

----- AGE=5 DOSE=10 -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
20	210.5715000	21.6752513	112.0000000	499.8000000	96.9346706	9396.33	46.0340885

----- AGE=90 DOSE=0 -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
12	1307.97	138.7553146	526.7900000	2216.18	480.6625093	231036.45	36.7487177

----- AGE=90 DOSE=0.1 -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
12	1119.26	154.3018240	401.5800000	2104.11	534.5171978	285708.63	47.7563031

1

The SAS System

18:37 Tuesday, August 28, 2001 9

Analysis Variable : AREA

-----  
AGE=90 DOSE=1 -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
12	1557.79	230.1241945	692.2200000	3285.41	797.1735938	635485.74	51.1735312

-----  
AGE=90 DOSE=3 -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
12	1015.97	103.4322890	679.6300000	1984.96	358.2999595	128378.86	35.2666697

-----  
AGE=90 DOSE=10 -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
12	1364.88	171.2571065	655.9800000	2398.98	593.2520192	351947.96	43.4654545

1

The SAS System

18:37 Tuesday, August 28, 2001 10

Analysis Variable : AREA

-----  
AGE=5 BLOCK=1 DOSE=0 -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
12	322.1275000	20.8245302	196.4000000	434.2000000	72.1382886	5203.93	22.3943279

-----  
AGE=5 BLOCK=1 DOSE=0.3 -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
12	284.5600000	14.0889565	225.2300000	419.3000000	48.8055768	2381.98	17.1512429

-----  
AGE=5 BLOCK=1 DOSE=1 -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
12	320.4008333	33.7592013	200.6100000	621.4600000	116.9453036	13676.20	36.4996877

----- AGE=5 BLOCK=1 DOSE=3 -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
12	240.6183333	33.4036403	124.2800000	561.8000000	115.7136042	13389.64	48.0901029

----- AGE=5 BLOCK=1 DOSE=10 -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
12	225.0616667	30.1369216	115.6000000	499.8000000	104.3973588	10898.81	46.3861129

----- AGE=5 BLOCK=2 DOSE=0 -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
8	311.3912500	21.7940734	235.3000000	392.6000000	61.6429483	3799.85	19.7959796

----- AGE=5 BLOCK=2 DOSE=0.3 -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
8	222.7950000	9.4615619	193.4700000	271.8700000	26.7613383	716.1692286	12.0116422

1 The SAS System 18:37 Tuesday, August 28, 2001 11

Analysis Variable : AREA

----- AGE=5 BLOCK=2 DOSE=1 -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
8	201.8750000	20.3689056	120.4400000	290.5000000	57.6119650	3319.14	28.5384347

----- AGE=5 BLOCK=2 DOSE=3 -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
8	194.0687500	19.8871049	109.3000000	267.1600000	56.2492269	3163.98	28.9841754

----- AGE=5 BLOCK=2 DOSE=10 -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV

8	188.8362500	30.5732245	112.0000000	360.4100000	86.4741375	7477.78	45.7931872
---	-------------	------------	-------------	-------------	------------	---------	------------

----- AGE=90 BLOCK=1 DOSE=0 -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
12	1307.97	138.7553146	526.7900000	2216.18	480.6625093	231036.45	36.7487177

----- AGE=90 BLOCK=1 DOSE=0.1 -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
12	1119.26	154.3018240	401.5800000	2104.11	534.5171978	285708.63	47.7563031

----- AGE=90 BLOCK=1 DOSE=1 -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
12	1557.79	230.1241945	692.2200000	3285.41	797.1735938	635485.74	51.1735312

----- AGE=90 BLOCK=1 DOSE=3 -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
12	1015.97	103.4322890	679.6300000	1984.96	358.2999595	128378.86	35.2666697

1 The SAS System 18:37 Tuesday, August 28, 2001 12

Analysis Variable : AREA

----- AGE=90 BLOCK=1 DOSE=10 -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
12	1364.88	171.2571065	655.9800000	2398.98	593.2520192	351947.96	43.4654545

1 ARGUS NEURODEVELOPMENTAL - THYROID LUMEN DATA - PND5 18:37 Tuesday, August 28, 2001 13  
PROC GLM - MAIN EFFECTS AND INTERACTIONS

General Linear Models Procedure  
Class Level Information

Class	Levels	Values
BLOCK	2	1 2
DOSE	5	0 1 3 10 0.3

	GENDER	2	F M		
Number of observations in data set = 100					
1	ARGUS NEURODEVELOPMENTAL - THYROID LUMEN DATA - PND5 PROC GLM - MAIN EFFECTS AND INTERACTIONS			18:37 Tuesday, August 28, 2001	14
	General Linear Models Procedure				
	Dependent Variable: AREA				
	Source	DF	Sum of Squares	Mean Square	F Value Pr > F
	Model	19	346209.90265000	18221.57382368	2.73 0.0010
	Error	80	534073.52542500	6675.91906781	.
	Corrected Total	99	880283.42807501		
	R-Square		C.V.	Root MSE	AREA Mean
		0.393294	31.83575	81.70629760	256.64950000
	Source	DF	Type I SS	Mean Square	F Value Pr > F
	BLOCK	1	71968.87760417	71968.87760417	10.78 0.0015
	DOSE	4	146891.83317000	36722.95829250	5.50 0.0006
	BLOCK*DOSE	4	31028.08228833	7757.02057208	1.16 0.3339
	GENDER	1	74.73602500	74.73602500	0.01 0.9160
	BLOCK*GENDER	1	25175.45150417	25175.45150417	3.77 0.0557
	DOSE*GENDER	4	10590.60917000	2647.65229250	0.40 0.8105
	BLOCK*DOSE*GENDER	4	60480.31288833	15120.07822208	2.26 0.0694
	Source	DF	Type III SS	Mean Square	F Value Pr > F
	BLOCK	1	71968.87760417	71968.87760417	10.78 0.0015
	DOSE	4	144140.98140433	36035.24535108	5.40 0.0007
	BLOCK*DOSE	4	31028.08228833	7757.02057208	1.16 0.3339
	GENDER	1	541.17704817	541.17704817	0.08 0.7766
	BLOCK*GENDER	1	25175.45150417	25175.45150417	3.77 0.0557
	DOSE*GENDER	4	4930.14328433	1232.53582108	0.18 0.9458
	BLOCK*DOSE*GENDER	4	60480.31288833	15120.07822208	2.26 0.0694
1	ARGUS NEURODEVELOPMENTAL - THYROID LUMEN DATA - PND5 PROC GLM - STEP DOWN MAIN EFFECTS WITH DUNCANS LIBERAL APPROACH			18:37 Tuesday, August 28, 2001	15
	General Linear Models Procedure				
	Class Level Information				
	Class	Levels	Values		

DOSE	5	0	1	3	10	0.3
BLOCK	2	1	2			

Number of observations in data set = 100

1 ARGUS NEURODEVELOPMENTAL - THYROID LUMEN DATA - PND5 18:37 Tuesday, August 28, 2001 16  
 PROC GLM - STEP DOWN MAIN EFFECTS WITH DUNCANS LIBERAL APPROACH

General Linear Models Procedure

Dependent Variable: AREA

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	5	218860.71077417	43772.14215483	6.22	0.0001
Error	94	661422.71730084	7036.41188618		
Corrected Total	99	880283.42807501			

R-Square	C.V.	Root MSE	AREA Mean
0.248625	32.68400	83.88332305	256.64950000

Source	DF	Type I SS	Mean Square	F Value	Pr > F
DOSE	4	146891.83317000	36722.95829250	5.22	0.0008
BLOCK	1	71968.87760417	71968.87760417	10.23	0.0019
Source	DF	Type III SS	Mean Square	F Value	Pr > F
DOSE	4	146891.83317000	36722.95829250	5.22	0.0008
BLOCK	1	71968.87760417	71968.87760417	10.23	0.0019

1 ARGUS NEURODEVELOPMENTAL - THYROID LUMEN DATA - PND5 18:37 Tuesday, August 28, 2001 17  
 PROC GLM - STEP DOWN MAIN EFFECTS WITH DUNCANS LIBERAL APPROACH

General Linear Models Procedure

Duncan's Multiple Range Test for variable: AREA

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha= 0.05 df= 94 MSE= 7036.412

Number of Means	2	3	4	5
Critical Range	52.67	55.42	57.25	58.59

Means with the same letter are not significantly different.

Duncan Grouping		Mean	N	DOSE
	A	317.83	20	0
	A			
B	A	272.99	20	1
B				
B	C	259.85	20	0.3
B	C			
B	C	222.00	20	3
	C			
	C	210.57	20	10

1

ARGUS NEURODEVELOPMENTAL - THYROID LUMEN DATA - PND5  
PROC GLM - STEP DOWN MAIN EFFECTS WITH DUNCANS  
CONSERVATIVE APPROACH

18:37 Tuesday, August 28, 2001 18

General Linear Models Procedure  
Class Level Information

Class	Levels	Values
DOSE	5	0 1 3 10 0.3
BLOCK	2	1 2
GENDER	2	F M

Number of observations in data set = 100

1

ARGUS NEURODEVELOPMENTAL - THYROID LUMEN DATA - PND5  
PROC GLM - STEP DOWN MAIN EFFECTS WITH DUNCANS  
CONSERVATIVE APPROACH

18:37 Tuesday, August 28, 2001 19

General Linear Models Procedure

Dependent Variable: AREA

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	19	346209.90265000	18221.57382368	2.73	0.0010
Error	80	534073.52542500	6675.91906781		
Corrected Total	99	880283.42807501			
R-Square		C.V.	Root MSE		AREA Mean
0.393294		31.83575	81.70629760		256.64950000
Source	DF	Type I SS	Mean Square	F Value	Pr > F

DOSE	4	146891.83317000	36722.95829250	5.50	0.0006
BLOCK	1	71968.87760417	71968.87760417	10.78	0.0015
DOSE*BLOCK	4	31028.08228833	7757.02057208	1.16	0.3339
GENDER	1	74.73602500	74.73602500	0.01	0.9160
DOSE*GENDER	4	10590.60917000	2647.65229250	0.40	0.8105
BLOCK*GENDER	1	25175.45150417	25175.45150417	3.77	0.0557
DOSE*BLOCK*GENDER	4	60480.31288833	15120.07822208	2.26	0.0694
Source	DF	Type III SS	Mean Square	F Value	Pr > F
DOSE	4	144140.98140433	36035.24535108	5.40	0.0007
BLOCK	1	71968.87760417	71968.87760417	10.78	0.0015
DOSE*BLOCK	4	31028.08228833	7757.02057208	1.16	0.3339
GENDER	1	541.17704817	541.17704817	0.08	0.7766
DOSE*GENDER	4	4930.14328433	1232.53582108	0.18	0.9458
BLOCK*GENDER	1	25175.45150417	25175.45150417	3.77	0.0557
DOSE*BLOCK*GENDER	4	60480.31288833	15120.07822208	2.26	0.0694

1

ARGUS NEURODEVELOPMENTAL - THYROID LUMEN DATA - PND5  
 PROC GLM - STEP DOWN MAIN EFFECTS WITH DUNCANS  
 CONSERVATIVE APPROACH

18:37 Tuesday, August 28, 2001 20

## General Linear Models Procedure

Duncan's Multiple Range Test for variable: AREA

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha= 0.05 df= 80 MSE= 6675.919

Number of Means	2	3	4	5
Critical Range	51.42	54.10	55.88	57.18

Means with the same letter are not significantly different.

Duncan Grouping		Mean	N	DOSE
A	A	317.83	20	0
B	A	272.99	20	1
B	C	259.85	20	0.3
B	C	222.00	20	3
	C	210.57	20	10

1

ARGUS NEURODEVELOPMENTAL - THYROID LUMEN DATA - PND90  
 PROC GLM - MAIN EFFECTS AND INTERACTIONS

18:37 Tuesday, August 28, 2001 21

General Linear Models Procedure  
 Class Level Information

Class	Levels	Values
DOSE	5	0 1 3 10 0.1
GENDER	2	f m

Number of observations in data set = 60

1 ARGUS NEURODEVELOPMENTAL - THYROID LUMEN DATA - PND90 18:37 Tuesday, August 28, 2001 22  
PROC GLM - MAIN EFFECTS AND INTERACTIONS

General Linear Models Procedure

Dependent Variable: AREA

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	9	6637602.96020833	737511.44002315	2.73	0.0112
Error	50	13486125.95645000	269722.51912900		
Corrected Total	59	20123728.91665830			
		R-Square	C.V.	Root MSE	AREA Mean
		0.329840	40.79160	519.34816754	1273.17416667
Source	DF	Type I SS	Mean Square	F Value	Pr > F
DOSE	4	2165594.87263333	541398.71815833	2.01	0.1077
GENDER	1	2567293.95360165	2567293.95360165	9.52	0.0033
DOSE*GENDER	4	1904714.13397334	476178.53349333	1.77	0.1506
Source	DF	Type III SS	Mean Square	F Value	Pr > F
DOSE	4	2165594.87263334	541398.71815833	2.01	0.1077
GENDER	1	2567293.95360165	2567293.95360165	9.52	0.0033
DOSE*GENDER	4	1904714.13397334	476178.53349333	1.77	0.1506

## APPENDIX 2

### Rat Developmental Neurotoxicity Study Hormone Measurements

Reference: Argus Research Laboratories, Inc. (1998a) A neurobehavioral developmental study of ammonium perchlorate administered orally in drinking water to rats [report amendment: July 27]. Horsham, PA: Argus Research Laboratories, Inc.; protocol report no. 1613-002.

11

The SAS System

09:42 Tuesday, June 12, 2001

NOTE: Copyright (c) 1989-1996 by SAS Institute Inc., Cary, NC, USA.  
 NOTE: SAS (r) Proprietary Software Release 6.12 TS020  
 Licensed to US ENVIRONMENTAL PROTECTION AGENCY, Site 0019614059.

NOTE: Running on ALPHASERVER Model 2100 5/300 Serial Number 80000000.

Welcome to the NHEERL-RTP SAS Information Delivery System.

```

1      *THIS FILE IS FOUND AT [CROFTON.THYROID.perchlorate]perchlorate_dn_pnd5.SAS;
2      *IT ANALYZES THE THYROID HORMONE DATA FROM THE Argus Neurodevelopmental PERCHLORATE STUDY;
3
4
5      *INPUT DATA INTO SAS DATASET;
6      DATA RAW; INFILE '[CROFTON.THYROID.PERCHLORATE] PERCHLORATE_DN_PND5.Txt';
7          INPUT WPAFB $ 1-16 DOSE $ ANIM TSH T4 T3;
8
9      *ASSIGN DOSAGE VALUES TO TREATMENT CODES;
10     IF DOSE = '1' THEN TRT = '1-----CONTROL';
11     IF DOSE = '2' THEN TRT = '2--0.1_mg/kg/day';
12     IF DOSE = '3' THEN TRT = '3--1.0_mg/kg/day';
13     IF DOSE = '4' THEN TRT = '4--3.0_mg/kg/day';
14     IF DOSE = '5' THEN TRT = '5-10.0_mg/kg/day';
15

```

NOTE: The infile '[CROFTON.THYROID.PERCHLORATE] PERCHLORATE\_DN\_PND5.Txt' is:  
 File=DSA21:[SAS\$USERS.CROFTON.THYROID.PERCHLORATE] PERCHLORATE\_DN\_PND5.TXT

NOTE: 85 records were read from the infile '[CROFTON.THYROID.PERCHLORATE] PERCHLORATE\_DN\_PND5.Txt'.  
 The minimum record length was 43.  
 The maximum record length was 45.

NOTE: The data set WORK.RAW has 85 observations and 7 variables.

```

16         PROC PRINT;
17
18         *SORT DATA BY TRT -- THEN GET MEANS;
19
20

```

NOTE: The PROCEDURE PRINT printed pages 1-2.

```

20         PROC SORT; BY TRT;
21

```

NOTE: The data set WORK.RAW has 85 observations and 7 variables.

```

21         PROC MEANS N MEAN STDERR MIN MAX STD VAR CV; BY TRT;
22             VAR TSH T3 T4;
23
24
25         *RUN ONE WAY ANOVAS FOR ALL VARIABLES;
26

```

NOTE: The PROCEDURE MEANS printed page 3.

```

26         PROC SORT; BY TRT;
27
28

```

The SAS System

09:42 Tuesday, June 12, 2001

NOTE: Input data set is already sorted, no sorting done.

```
27      PROC GLM;
28      CLASSES TRT;
29      MODEL TSH T3 T4 = TRT;
30      MEANS TRT/DUNCAN LINES;
31      TITLE1 "ARGUS DEVELOPMENTAL NEURO PND5 PUP THYROID HORMONES - ALL VARIABLES";
32      TITLE2 "PROC GLM - MAIN EFFECT OF TRT - WITH DUNCAN";
33      ENDSAS;
```

NOTE: The PROCEDURE GLM printed pages 4-10.

NOTE: SAS Institute Inc., SAS Campus Drive, Cary, NC USA 27513-2414

1

## The SAS System

09:42 Tuesday, June 12, 2001 1

OBS	WPAPB	DOSE	ANIM	TSH	T4	T3	TRT
1	1,F1/MandF,19508	1	19508	4.15	3.17	.	1-----CONTROL
2	1,F1/MandF,19520	1	19520	4.23	2.67	88.8	1-----CONTROL
3	1,F1/MandF,19523	1	19523	4.36	3.49	91.1	1-----CONTROL
4	1,F1/MandF,19526	1	19526	4.06	.	97.9	1-----CONTROL
5	1,F1/MandF,19530	1	19530	4.12	3.37	84.0	1-----CONTROL
6	1,F1/MandF,19549	1	19549	4.68	3.67	82.1	1-----CONTROL
7	1,F1/MandF,19556	1	19556	4.19	3.83	84.1	1-----CONTROL
8	1,F1/MandF,19558	1	19558	4.94	3.29	86.0	1-----CONTROL
9	1,F1/MandF,19571	1	19571	4.09	.	86.5	1-----CONTROL
10	1,F1/MandF,19580	1	19580	4.15	3.07	.	1-----CONTROL
11	1,F1/MandF,19582	1	19582	4.30	2.90	.	1-----CONTROL
12	1,F1/MandF,19585	1	19585	4.72	3.52	.	1-----CONTROL
13	1,F1/MandF,19608	1	19608	4.34	3.81	.	1-----CONTROL
14	1,F1/MandF,19610	1	19610	4.94	3.85	.	1-----CONTROL
15	1,F1/MandF,19611	1	19611	5.46	3.54	.	1-----CONTROL
16	1,F1/MandF,19614	1	19614	5.53	3.85	81.5	1-----CONTROL
17	1,F1/MandF,19621	1	19621	4.45	3.11	97.7	1-----CONTROL
18	2,F1/MandF,19511	2	19511	4.60	3.37	94.1	2--0.1_mg/kg/day
19	2,F1/MandF,19514	2	19514	3.87	3.04	.	2--0.1_mg/kg/day
20	2,F1/MandF,19527	2	19527	5.01	3.67	77.8	2--0.1_mg/kg/day
21	2,F1/MandF,19533	2	19533	3.88	2.87	79.5	2--0.1_mg/kg/day
22	2,F1/MandF,19534	2	19534	4.19	3.43	92.3	2--0.1_mg/kg/day
23	2,F1/MandF,19536	2	19536	4.62	.	.	2--0.1_mg/kg/day
24	2,F1/MandF,19542	2	19542	4.94	3.30	77.9	2--0.1_mg/kg/day
25	2,F1/MandF,19575	2	19575	4.20	3.23	90.9	2--0.1_mg/kg/day
26	2,F1/MandF,19576	2	19576	4.09	3.05	83.3	2--0.1_mg/kg/day
27	2,F1/MandF,19590	2	19590	4.30	3.84	74.5	2--0.1_mg/kg/day
28	2,F1/MandF,19593	2	19593	4.76	3.03	94.9	2--0.1_mg/kg/day
29	2,F1/MandF,19594	2	19594	4.89	.	.	2--0.1_mg/kg/day
30	2,F1/MandF,19605	2	19605	5.25	3.67	86.1	2--0.1_mg/kg/day
31	2,F1/MandF,19662	2	19662	4.71	.	.	2--0.1_mg/kg/day
32	3,F1/MandF,19504	3	19504	4.56	3.69	74.3	3--1.0_mg/kg/day
33	3,F1/MandF,19521	3	19521	4.74	3.50	89.5	3--1.0_mg/kg/day
34	3,F1/MandF,19535	3	19535	4.04	2.92	91.3	3--1.0_mg/kg/day
35	3,F1/MandF,19538	3	19538	5.13	2.91	75.5	3--1.0_mg/kg/day
36	3,F1/MandF,19539	3	19539	4.40	3.15	80.9	3--1.0_mg/kg/day
37	3,F1/MandF,19547	3	19547	4.51	3.11	78.1	3--1.0_mg/kg/day
38	3,F1/MandF,19568	3	19568	4.39	3.31	.	3--1.0_mg/kg/day
39	3,F1/MandF,19579	3	19579	4.38	.	.	3--1.0_mg/kg/day
40	3,F1/MandF,19584	3	19584	4.89	2.71	70.8	3--1.0_mg/kg/day
41	3,F1/MandF,19586	3	19586	4.22	.	.	3--1.0_mg/kg/day
42	3,F1/MandF,19587	3	19587	5.61	2.98	78.9	3--1.0_mg/kg/day
43	3,F1/MandF,19588	3	19588	4.98	.	.	3--1.0_mg/kg/day
44	3,F1/MandF,19589	3	19589	5.63	.	.	3--1.0_mg/kg/day
45	3,F1/MandF,19592	3	19592	4.78	3.18	71.0	3--1.0_mg/kg/day
46	3,F1/MandF,19596	3	19596	5.28	2.84	83.5	3--1.0_mg/kg/day
47	3,F1/MandF,19597	3	19597	4.03	.	.	3--1.0_mg/kg/day
48	3,F1/MandF,19603	3	19603	4.88	3.33	.	3--1.0_mg/kg/day
49	3,F1/MandF,19616	3	19616	5.11	3.15	.	3--1.0_mg/kg/day
50	4,F1/MandF,19522	4	19522	4.73	2.46	40.4	4--3.0_mg/kg/day
51	4,F1/MandF,19525	4	19525	5.01	2.28	38.9	4--3.0_mg/kg/day
52	4,F1/MandF,19537	4	19537	4.13	2.92	38.0	4--3.0_mg/kg/day
53	4,F1/MandF,19544	4	19544	5.58	2.73	46.1	4--3.0_mg/kg/day
54	4,F1/MandF,19554	4	19554	3.76	2.37	37.2	4--3.0_mg/kg/day
55	4,F1/MandF,19557	4	19557	5.03	2.52	42.4	4--3.0_mg/kg/day
56	4,F1/MandF,19569	4	19569	4.99	3.12	40.0	4--3.0_mg/kg/day

1

## The SAS System

09:42 Tuesday, June 12, 2001 2

OBS	WPAPB	DOSE	ANIM	TSH	T4	T3	TRT
-----	-------	------	------	-----	----	----	-----

57	4,F1/MandF,19573	4	19573	3.97	.	.	4--3.0_mg/kg/day
58	4,F1/MandF,19577	4	19577	4.92	2.78	37.3	4--3.0_mg/kg/day
59	4,F1/MandF,19598	4	19598	4.60	2.76	34.5	4--3.0_mg/kg/day
60	4,F1/MandF,19600	4	19600	5.29	2.90	35.1	4--3.0_mg/kg/day
61	4,F1/MandF,19604	4	19604	4.95	.	43.4	4--3.0_mg/kg/day
62	4,F1/MandF,19607	4	19607	4.92	.	.	4--3.0_mg/kg/day
63	4,F1/MandF,19612	4	19612	4.95	.	.	4--3.0_mg/kg/day
64	4,F1/MandF,19617	4	19617	5.10	2.64	36.7	4--3.0_mg/kg/day
65	4,F1/MandF,19618	4	19618	4.89	.	.	4--3.0_mg/kg/day
66	4,F1/MandF,19622	4	19622	4.34	.	.	4--3.0_mg/kg/day
67	5,F1/MandF,19502	5	19502	4.85	2.17	35.3	5-10.0_mg/kg/day
68	5,F1/MandF,19512	5	19512	5.83	2.52	35.4	5-10.0_mg/kg/day
69	5,F1/MandF,19528	5	19528	5.00	.	.	5-10.0_mg/kg/day
70	5,F1/MandF,19529	5	19529	5.87	2.28	36.6	5-10.0_mg/kg/day
71	5,F1/MandF,19532	5	19532	6.19	2.25	33.7	5-10.0_mg/kg/day
72	5,F1/MandF,19541	5	19541	6.09	2.83	39.3	5-10.0_mg/kg/day
73	5,F1/MandF,19543	5	19543	6.32	.	34.8	5-10.0_mg/kg/day
74	5,F1/MandF,19551	5	19551	6.26	2.68	45.9	5-10.0_mg/kg/day
75	5,F1/MandF,19552	5	19552	4.53	2.73	38.0	5-10.0_mg/kg/day
76	5,F1/MandF,19553	5	19553	5.30	2.78	39.6	5-10.0_mg/kg/day
77	5,F1/MandF,19560	5	19560	5.71	2.51	43.8	5-10.0_mg/kg/day
78	5,F1/MandF,19570	5	19570	4.74	.	.	5-10.0_mg/kg/day
79	5,F1/MandF,19572	5	19572	4.61	2.73	.	5-10.0_mg/kg/day
80	5,F1/MandF,19574	5	19574	5.86	2.58	37.5	5-10.0_mg/kg/day
81	5,F1/MandF,19591	5	19591	5.89	.	.	5-10.0_mg/kg/day
82	5,F1/MandF,19595	5	19595	5.79	.	.	5-10.0_mg/kg/day
83	5,F1/MandF,19601	5	19601	5.25	2.32	41.6	5-10.0_mg/kg/day
84	5,F1/MandF,19613	5	19613	5.04	.	.	5-10.0_mg/kg/day
85	5,F1/MandF,19620	5	19620	5.79	.	.	5-10.0_mg/kg/day

The SAS System

09:42 Tuesday, June 12, 2001 3

1

-----TRT=1-----CONTROL-----

Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
TSH	17	4.5123529	0.1127156	4.0600000	5.5300000	0.4647382	0.2159816	10.2992437
T3	10	87.9700000	1.8763469	81.5000000	97.9000000	5.9335300	35.2067778	6.7449471
T4	15	3.4093333	0.0954561	2.6700000	3.8500000	0.3697000	0.1366781	10.8437624

-----TRT=2---0.1\_mg/kg/day-----

Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
TSH	14	4.5221429	0.1165680	3.8700000	5.2500000	0.4361577	0.1902335	9.6449336
T3	10	85.1300000	2.3935121	74.5000000	94.9000000	7.5689497	57.2890000	8.8910487
T4	11	3.3181818	0.0942127	2.8700000	3.8400000	0.3124682	0.0976364	9.4168493

-----TRT=3---1.0\_mg/kg/day-----

Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
TSH	18	4.7533333	0.1135465	4.0300000	5.6300000	0.4817371	0.2320706	10.1347206
T3	10	79.3800000	2.2369523	70.8000000	91.3000000	7.0738643	50.0395556	8.9113936
T4	13	3.1369231	0.0760177	2.7100000	3.6900000	0.2740859	0.0751231	8.7374120

-----TRT=4---3.0\_mg/kg/day-----

Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
TSH	17	4.7741176	0.1153322	3.7600000	5.5800000	0.4755268	0.2261257	9.9605170
T3	12	39.1666667	0.9994190	34.5000000	46.1000000	3.4620891	11.9860606	8.8393763
T4	11	2.6800000	0.0768824	2.2800000	3.1200000	0.2549902	0.0650200	9.5145595

----- TRT=5-10.0\_mg/kg/day -----

Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
TSH	19	5.5221053	0.1335734	4.5300000	6.3200000	0.5822330	0.3389953	10.5436789
T3	12	38.4583333	1.0861705	33.7000000	45.9000000	3.7626051	14.1571970	9.7835885
T4	12	2.5316667	0.0658607	2.1700000	2.8300000	0.2281480	0.0520515	9.0117714

1 ARGUS DEVELOPMENTAL NEURO PND5 PUP THYROID HORMONES - ALL VARIABLES 4  
 PROC GLM - MAIN EFFECT OF TRT - WITH DUNCAN 09:42 Tuesday, June 12, 2001

General Linear Models Procedure  
 Class Level Information

Class	Levels	Values
TRT	5	1-----CONTROL 2--0.1_mg/kg/day 3--1.0_mg/kg/day 4--3.0_mg/kg/day 5-10.0_mg/kg/day

Number of observations in data set = 85

Group	Obs	Dependent Variables
1	85	TSH
2	54	T3
3	62	T4

NOTE: Variables in each group are consistent with respect to the presence or absence of missing values.

1 ARGUS DEVELOPMENTAL NEURO PND5 PUP THYROID HORMONES - ALL VARIABLES 5  
 PROC GLM - MAIN EFFECT OF TRT - WITH DUNCAN 09:42 Tuesday, June 12, 2001

General Linear Models Procedure

Dependent Variable: TSH

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	4	12.28773556	3.07193389	12.54	0.0001
Error	80	19.59386915	0.24492336		
Corrected Total	84	31.88160471			
		R-Square	C.V.	Root MSE	TSH Mean
		0.385418	10.21869	0.49489733	4.84305882

Source	DF	Type I SS	Mean Square	F Value	Pr > F
--------	----	-----------	-------------	---------	--------

TRT	4	12.28773556	3.07193389	12.54	0.0001
Source	DF	Type III SS	Mean Square	F Value	Pr > F
TRT	4	12.28773556	3.07193389	12.54	0.0001

1 ARGUS DEVELOPMENTAL NEURO PND5 PUP THYROID HORMONES - ALL VARIABLES  
 PROC GLM - MAIN EFFECT OF TRT - WITH DUNCAN 6  
 09:42 Tuesday, June 12, 2001

## General Linear Models Procedure

## Duncan's Multiple Range Test for variable: TSH

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha= 0.05 df= 80 MSE= 0.244923

WARNING: Cell sizes are not equal.

Harmonic Mean of cell sizes= 16.82014

Number of Means	2	3	4	5
Critical Range	.3396	.3573	.3691	.3777

Means with the same letter are not significantly different.

Duncan Grouping	Mean	N	TRT
A	5.5221	19	5-10.0_mg/kg/day
B	4.7741	17	4--3.0_mg/kg/day
B	4.7533	18	3--1.0_mg/kg/day
B	4.5221	14	2--0.1_mg/kg/day
B	4.5124	17	1-----CONTROL

1 ARGUS DEVELOPMENTAL NEURO PND5 PUP THYROID HORMONES - ALL VARIABLES  
 PROC GLM - MAIN EFFECT OF TRT - WITH DUNCAN 7  
 09:42 Tuesday, June 12, 2001

## General Linear Models Procedure

## Dependent Variable: T3

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	4	27804.67450000	6951.16862500	216.89	0.0001
Error	49	1570.39383333	32.04885374		
Corrected Total	53	29375.06833333			
R-Square		C.V.	Root MSE	T3 Mean	
0.946540		8.844811	5.66117070	64.00555556	
Source	DF	Type I SS	Mean Square	F Value	Pr > F

TRT	4	27804.67450000	6951.16862500	216.89	0.0001
Source	DF	Type III SS	Mean Square	F Value	Pr > F
TRT	4	27804.67450000	6951.16862500	216.89	0.0001

1 ARGUS DEVELOPMENTAL NEURO PND5 PUP THYROID HORMONES - ALL VARIABLES  
 PROC GLM - MAIN EFFECT OF TRT - WITH DUNCAN 8  
 09:42 Tuesday, June 12, 2001

## General Linear Models Procedure

## Duncan's Multiple Range Test for variable: T3

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha= 0.05 df= 49 MSE= 32.04885

WARNING: Cell sizes are not equal.

Harmonic Mean of cell sizes= 10.71429

Number of Means	2	3	4	5
Critical Range	4.915	5.170	5.337	5.458

Means with the same letter are not significantly different.

Duncan Grouping	Mean	N	TRT
A	87.970	10	1-----CONTROL
A	85.130	10	2--0.1_mg/kg/day
B	79.380	10	3--1.0_mg/kg/day
C	39.167	12	4--3.0_mg/kg/day
C	38.458	12	5-10.0_mg/kg/day

1 ARGUS DEVELOPMENTAL NEURO PND5 PUP THYROID HORMONES - ALL VARIABLES  
 PROC GLM - MAIN EFFECT OF TRT - WITH DUNCAN 9  
 09:42 Tuesday, June 12, 2001

## General Linear Models Procedure

## Dependent Variable: T4

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	4	7.54525428	1.88631357	21.44	0.0001
Error	57	5.01410056	0.08796668		
Corrected Total	61	12.55935484			
	R-Square	C.V.	Root MSE	T4 Mean	
	0.600768	9.766672	0.29659177	3.03677419	
Source	DF	Type I SS	Mean Square	F Value	Pr > F
TRT	4	7.54525428	1.88631357	21.44	0.0001

Source	DF	Type III SS	Mean Square	F Value	Pr > F
TRT	4	7.54525428	1.88631357	21.44	0.0001

1 ARGUS DEVELOPMENTAL NEURO PND5 PUP THYROID HORMONES - ALL VARIABLES  
 PROC GLM - MAIN EFFECT OF TRT - WITH DUNCAN 10  
 09:42 Tuesday, June 12, 2001

General Linear Models Procedure

Duncan's Multiple Range Test for variable: T4

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha= 0.05 df= 57 MSE= 0.087967

WARNING: Cell sizes are not equal.

Harmonic Mean of cell sizes= 12.23268

Number of Means	2	3	4	5
Critical Range	.2401	.2526	.2608	.2668

Means with the same letter are not significantly different.

Duncan Grouping		Mean	N	TRT
A	A	3.4093	15	1-----CONTROL
B	A	3.3182	11	2--0.1_mg/kg/day
B		3.1369	13	3--1.0_mg/kg/day
C		2.6800	11	4--3.0_mg/kg/day
C		2.5317	12	5-10.0_mg/kg/day

## APPENDIX 3

### Rat Subchronic Study - T4

Reference: Springborn Laboratories, Inc. (1998) A 90-day drinking water toxicity study in rats with ammonium perchlorate: amended final report [amended study completion date: June 3]. Spencerville, OH: Springborn Laboratories, Inc.; study no. 3455.1.

11

The SAS System

08:42 Thursday, August 23, 2001

NOTE: Copyright (c) 1989-1996 by SAS Institute Inc., Cary, NC, USA.  
 NOTE: SAS (r) Proprietary Software Release 6.12 TS020  
 Licensed to US ENVIRONMENTAL PROTECTION AGENCY, Site 0019614059.  
 NOTE: Running on ALPHASERVER Model 2100 5/300 Serial Number 80000000.

Welcome to the NHEERL-RTP SAS Information Delivery System.

```

1      *THIS FILE IS FOUND AT [CROFTON.THYROID]PERCHLORATE_SUBCHRONIC_T4.SAS;
2      *IT ANALYZES THE T4 THYROID HORMONE DATA FROM THE WPAFB 90 DAY PERCHLORATE STUDY;
3
4      *INPUT DATA INTO SAS DATASET;
5      DATA RAW; INFILE '[CROFTON.THYROID.PERCHLORATE]PERCHLORATE_SUBCHRONIC_TH.TXT';
6          INPUT ANIM GENDER$ DAY$ DOSE$ STUDYDAY T4 T3 TSH;
7
8      *DEFINITIONS OF VARIABLES;
9      *      ANIM = ANIMAL ID;
10     *      DAY = RANGE OF DAYS-ON-STUDY;
11     *      TRT = TREATMENT CODE;
12     *      STUDYDAY = DAY OF SAMPLING;
13     *      T4 = THYROXINE, ug/dl;
14     *      T3 = TRIIODOTHYRONINE, ng/ml;
15     *      TSH = THYROID STIMULATING HORMONE, ng/ml;
16
17     *ASSIGN TREATMENTS TO DOSAGE CODES IN MG/KG/DAY;
18     IF DOSE = '1' THEN TRT = '1-CONTROL';
19     IF DOSE = '2' THEN TRT = '2----0.01';
20     IF DOSE = '3' THEN TRT = '3----0.05';
21     IF DOSE = '4' THEN TRT = '4----0.20';
22     IF DOSE = '5' THEN TRT = '5----1.00';
23     IF DOSE = '6' THEN TRT = '6---10.00';
24
25     *REASSIGN DAY VARIABLE;
26     IF DAY = '15-18' THEN DAY = '15';
27     IF DAY = '92-95' THEN DAY = '90';
28     IF DAY = '97-123' THEN DAY = '120';
29
30     *PRINT THE RAW DATA FILE;

```

NOTE: The infile '[CROFTON.THYROID.PERCHLORATE]PERCHLORATE\_SUBCHRONIC\_TH.TXT' is:  
 File=DSA21:[SAS\$USERS.CROFTON.THYROID.PERCHLORATE]PERCHLORATE\_SUBCHRONIC\_TH.TXT

NOTE: 320 records were read from the infile '[CROFTON.THYROID.PERCHLORATE]PERCHLORATE\_SUBCHRONIC\_TH.TXT'.  
 The minimum record length was 58.  
 The maximum record length was 60.

NOTE: The data set WORK.RAW has 320 observations and 9 variables.

```

31         PROC PRINT;
32
33         *SORT DATA BY DAY, TRT AND GENDER -- THEN GET MEANS;
34
35

```

NOTE: The PROCEDURE PRINT printed pages 1-6.

```

35         PROC SORT; BY DAY TRT GENDER;
12
36

```

The SAS System 08:42 Thursday, August 23, 2001

NOTE: The data set WORK.RAW has 320 observations and 9 variables.

```
36      PROC MEANS N MEAN STDERR MIN MAX STD VAR CV; BY DAY TRT GENDER;
37          VAR T4;
38
39
```

NOTE: The PROCEDURE MEANS printed pages 7-11.

```
39      PROC SORT; BY DAY TRT;
40
```

NOTE: Input data set is already sorted, no sorting done.

```
40      PROC MEANS N MEAN STDERR MIN MAX STD VAR CV; BY DAY TRT;
41          VAR T4;
42
43
```

NOTE: The PROCEDURE MEANS printed pages 12-14.

```
43      PROC SORT; BY GENDER TRT;
```

NOTE: The data set WORK.RAW has 320 observations and 9 variables.

```
44      PROC MEANS N MEAN STDERR MIN MAX STD VAR CV; BY GENDER TRT;
45          VAR T4;
46
47
48      *RUN SEPARATE TWO WAY ANOVAS - GENDER*TRT FOR EACH DAY;
49      * THIS WAS DONE BECAUSE DATA ON DAY 120 IS INCOMPLETE FOR THE DOSE RESPONSE;
50      * THIS APPROACH WAS RECOMMENDED BY THE PEER REVIEW;
51
52
```

NOTE: The PROCEDURE MEANS printed pages 15-16.

```
52      PROC SORT;BY DAY GENDER TRT;
53
```

NOTE: The data set WORK.RAW has 320 observations and 9 variables.

```
53      PROC GLM; BY DAY;
54          CLASSES GENDER TRT;
55          MODEL T4 = GENDER|TRT;
56              TITLE1 "WPAFB 90-DAY PERCHLORATE - T4 DATA";
57              TITLE2 "PROC GLMs BY DAY - GENDER BY TRT INTERACTIONS";
58
59      *STEPDOWN ANOVA ANALYSES FOR T4 DATA - STEPDOWNS BY DAY;
60
61      *STEPDOWN ANOVAS FOR DAY 14;
62      * THERE WAS NO GENDER * TRT INTERACTION SO TWO APPROACHES WERE TAKEN TO RUN;
63      * THE MEAN CONTRASTS AS RECOMMENDED BY THE PEER REVIEW AND CONSULTATION WITH;
64      * ALLAN MARCUS;
65
```

13

The SAS System

08:42 Thursday, August 23, 2001

NOTE: The PROCEDURE GLM printed pages 17-22.

```
66      DATA RAW3; SET RAW;
67          IF DAY = '90' THEN DELETE;
```

```

68      IF DAY = '120' THEN DELETE;
69
70      *THIS IS THE 'CONSERVATIVE' APPROACH AND FITS THE FULL MODEL TO MINIMIZE;
71      *   THE ERROR TERM.  THIS WILL MAXIMIZE THE LIKELIHOOD OF DETECTING A;
72      *   SIGNIFICANT DIFFERENCE BETWEEN TREATMENT GROUPS;
73
74

```

NOTE: The data set WORK.RAW3 has 120 observations and 9 variables.

```

74      PROC SORT; BY TRT GENDER;
75

```

NOTE: The data set WORK.RAW3 has 120 observations and 9 variables.

```

75      PROC GLM;
76      CLASSES TRT GENDER;
77      MODEL T4 = TRT|GENDER;
78      MEANS TRT/DUNCAN LINES;
79          TITLE1 " WPAFB 90-DAY PERCHLORATE - T4 DATA";
80          TITLE2 "PROC GLM - STEPDOWN ANOVAS - MAIN EFFECT OF TRT";
81          TITLE3 "NOTE: T4 DATA DAY 14 ONLY -- CONSERVATIVE APPROACH";
82
83      *LESS CONSERVATIVE STEPDOWN'S - ONLY INCLUDES MAIN EFFECTS WITH p less than 0.05;
84

```

NOTE: Means from the MEANS statement are not adjusted for other terms in the model. For adjusted means, use the LSMEANS statement.

NOTE: The PROCEDURE GLM printed pages 23-25.

```

84      PROC GLM;
85      CLASSES TRT GENDER;
86      MODEL T4 = TRT GENDER;
87      MEANS TRT/DUNCAN LINES;
88          TITLE1 " WPAFB 90-DAY PERCHLORATE - T4 DATA";
89          TITLE2 "PROC GLM - STEPDOWN ANOVAS - MAIN EFFECT OF TRT";
90          TITLE3 " NOTE: T4 DATA DAY 14 ONLY - LIBERAL APPROACH";
91
92
93      *STEPDOWN ANOVA ANALYSES FOR T4 DATA FOR DAYS 90 AND 120 - STEPDOWNS BY GENDER;
94      *   THESE STEPDOWNS WERE CONDUCTED BY GENDER SINCE THERE WAS A HIGHLY;
95      *   SIGNIFICANT INTERACTION BETWEEN GENDER AND TREATMENT ON THESE DAYS;
96

```

NOTE: Means from the MEANS statement are not adjusted for other terms in the model. For adjusted means, use the LSMEANS statement.

NOTE: The PROCEDURE GLM printed pages 26-28.

```

97      DATA RAW4; SET RAW;
98      IF DAY = '15' THEN DELETE;
99
100

```

NOTE: The data set WORK.RAW4 has 200 observations and 9 variables.

```

100      PROC SORT; BY DAY GENDER;
14

```

The SAS System

08:42 Thursday, August 23, 2001

101

NOTE: The data set WORK.RAW4 has 200 observations and 9 variables.

```

101      PROC GLM; BY DAY GENDER;
102      CLASSES TRT;
103      MODEL T4 = TRT;

```

```

104      MEANS TRT/DUNCAN LINES;
105      TITLE1 "          WPAFB 90-DAY PERCHLORATE - T4 DATA" ;
106      TITLE2 "PROC GLM - STEPDOWN ANOVAS BY DAY AND GENDER - MAIN EFFECT OF TREATMENT";
107      TITLE3 "          NOTE: T4 DATA FOR DAY 90 AND 120 ONLY      ";
108
109      ENDSAS;

```

NOTE: The PROCEDURE GLM printed pages 29-40.

NOTE: SAS Institute Inc., SAS Campus Drive, Cary, NC USA 27513-2414

1 The SAS System 08:42 Thursday, August 23, 2001 1

OBS	ANIM	GENDER	DAY	DOSE	STUDYDAY	T4	T3	TSH	TRT
1	11716	M	15	1	18	6.05	203.72	15.74	1-CONTROL
2	11717	M	15	1	15	6.39	226.49	13.32	1-CONTROL
3	11718	M	15	1	16	5.10	200.14	13.08	1-CONTROL
4	11719	M	120	1	121	3.70	205.66	19.56	1-CONTROL
5	11720	M	15	1	15	5.64	208.45	13.72	1-CONTROL
6	11721	M	90	1	92	4.61	204.69	15.71	1-CONTROL
7	11722	M	120	1	121	5.25	187.41	22.83	1-CONTROL
8	11723	M	120	1	121	4.89	198.23	23.47	1-CONTROL
9	11724	M	90	1	92	5.02	182.65	14.38	1-CONTROL
10	11725	M	15	1	17	6.64	186.23	14.20	1-CONTROL
11	11726	M	120	1	121	5.07	174.51	20.12	1-CONTROL
12	11727	M	120	1	122	5.22	238.28	22.54	1-CONTROL
13	11728	M	15	1	17	5.88	234.21	16.38	1-CONTROL
14	11729	M	90	1	92	4.96	158.23	15.18	1-CONTROL
15	11730	M	120	1	122	5.10	212.19	19.79	1-CONTROL
16	11731	M	15	1	16	4.84	205.08	13.21	1-CONTROL
17	11732	M	90	1	93	4.63	156.89	17.72	1-CONTROL
18	11733	M	120	1	122	5.11	188.45	19.11	1-CONTROL
19	11734	M	90	1	93	6.35	189.84	17.50	1-CONTROL
20	11735	M	90	1	94	5.19	179.28	15.39	1-CONTROL
21	11736	M	90	1	94	5.12	215.33	17.61	1-CONTROL
22	11737	M	120	1	123	5.02	190.22	19.99	1-CONTROL
23	11738	M	90	1	94	4.37	160.86	14.98	1-CONTROL
24	11739	M	15	1	15	5.42	178.53	15.52	1-CONTROL
25	11740	M	120	1	123	4.75	234.82	19.91	1-CONTROL
26	11741	M	90	1	95	4.97	171.09	14.79	1-CONTROL
27	11742	M	90	1	95	5.38	179.51	18.61	1-CONTROL
28	11743	M	120	1	123	5.39	204.43	21.96	1-CONTROL
29	11744	M	15	1	18	5.29	170.16	17.45	1-CONTROL
30	11745	M	15	1	17	5.19	187.11	15.30	1-CONTROL
31	11746	M	90	2	92	3.22	158.15	16.27	2----0.01
32	11747	M	15	2	18	5.10	173.23	15.22	2----0.01
33	11748	M	90	2	92	4.22	155.40	16.87	2----0.01
34	11749	M	90	2	92	4.70	136.19	15.95	2----0.01
35	11750	M	90	2	93	4.23	152.61	17.54	2----0.01
36	11751	M	15	2	.	.	.	.	2----0.01
37	11752	M	90	2	93	4.12	154.06	15.40	2----0.01
38	11753	M	90	2	94	4.76	144.06	15.46	2----0.01
39	11754	M	90	2	94	4.38	186.86	14.96	2----0.01
40	11755	M	90	2	94	4.49	149.51	20.14	2----0.01
41	11756	M	15	2	17	4.23	170.49	12.76	2----0.01
42	11757	M	15	2	17	5.21	154.81	17.63	2----0.01
43	11758	M	15	2	.	.	.	.	2----0.01
44	11759	M	15	2	.	.	.	.	2----0.01
45	11760	M	15	2	17	6.03	136.30	18.41	2----0.01
46	11761	M	90	2	95	4.65	151.61	19.51	2----0.01
47	11762	M	15	2	.	.	.	.	2----0.01
48	11763	M	15	2	.	.	.	.	2----0.01

49	11764	M	15	2	18	5.70	183.30	16.49	2----0.01
50	11765	M	90	2	95	4.79	186.19	16.31	2----0.01
51	11766	M	15	3	16	5.06	136.55	16.30	3----0.05
52	11767	M	120	3	121	4.12	204.77	17.66	3----0.05
53	11768	M	15	3	17	5.55	167.33	16.44	3----0.05
54	11769	M	90	3	92	3.16	119.70	15.67	3----0.05
55	11770	M	120	3	121	3.61	200.87	22.11	3----0.05
56	11771	M	15	3	18	5.27	150.95	19.63	3----0.05
1	The SAS System								
							08:42 Thursday, August 23, 2001		2
OBS	ANIM	GENDER	DAY	DOSE	STUDYDAY	T4	T3	TSH	TRT
57	11772	M	15	3	18	4.65	141.88	14.89	3----0.05
58	11773	M	120	3	121	3.91	202.65	19.85	3----0.05
59	11774	M	90	3	92	3.28	124.63	17.77	3----0.05
60	11775	M	120	3	121	4.55	218.02	21.22	3----0.05
61	11776	M	90	3	92	3.30	131.45	15.41	3----0.05
62	11777	M	90	3	93	3.96	134.26	17.50	3----0.05
63	11778	M	15	3	.	.	.	.	3----0.05
64	11779	M	15	3	15	5.50	119.88	17.61	3----0.05
65	11780	M	90	3	93	4.06	119.90	17.19	3----0.05
66	11781	M	120	3	122	3.89	215.05	21.18	3----0.05
67	11782	M	120	3	122	3.39	208.74	20.83	3----0.05
68	11783	M	120	3	122	4.64	218.37	20.47	3----0.05
69	11784	M	15	3	17	5.26	121.66	17.17	3----0.05
70	11785	M	120	3	123	4.15	265.28	23.61	3----0.05
71	11786	M	15	3	15	5.05	139.26	15.92	3----0.05
72	11787	M	90	3	94	3.89	112.96	18.14	3----0.05
73	11788	M	120	3	123	3.99	198.57	22.25	3----0.05
74	11789	M	15	3	15	5.58	136.44	15.96	3----0.05
75	11790	M	90	3	94	3.95	107.63	18.40	3----0.05
76	11791	M	90	3	94	3.21	119.83	20.45	3----0.05
77	11792	M	90	3	95	3.64	122.87	20.22	3----0.05
78	11793	M	15	3	17	5.00	128.41	17.63	3----0.05
79	11794	M	90	3	95	3.87	157.14	17.59	3----0.05
80	11795	M	120	3	123	4.18	209.55	24.12	3----0.05
81	11797	M	90	4	92	3.89	106.68	18.81	4----0.20
82	11798	M	15	4	16	5.21	157.43	17.67	4----0.20
83	11799	M	90	4	92	3.61	103.68	17.78	4----0.20
84	11800	M	90	4	92	2.92	130.58	18.73	4----0.20
85	11801	M	15	4	17	4.36	129.67	15.45	4----0.20
86	11802	M	15	4	18	5.57	137.40	18.91	4----0.20
87	11803	M	15	4	15	4.91	135.51	16.67	4----0.20
88	11804	M	15	4	17	5.59	144.84	18.93	4----0.20
89	11805	M	90	4	93	3.71	132.97	20.76	4----0.20
90	11806	M	90	4	93	4.05	134.56	18.61	4----0.20
91	11807	M	15	4	15	4.99	172.39	20.03	4----0.20
92	11808	M	15	4	17	5.32	120.11	19.50	4----0.20
93	11809	M	90	4	94	3.66	126.89	21.29	4----0.20
94	11810	M	15	4	15	5.58	125.26	17.75	4----0.20
95	11811	M	90	4	94	3.21	144.36	21.26	4----0.20
96	11812	M	90	4	94	3.04	121.08	16.24	4----0.20
97	11813	M	15	4	16	4.99	138.63	15.95	4----0.20
98	11814	M	90	4	95	3.40	117.95	19.24	4----0.20
99	11815	M	90	4	95	3.46	113.34	16.98	4----0.20
100	11816	M	15	5	15	5.58	122.39	19.93	5----1.00
101	11817	M	90	5	92	3.87	134.53	17.31	5----1.00
102	11818	M	15	5	18	4.84	130.71	20.27	5----1.00
103	11819	M	15	5	15	5.17	139.56	17.39	5----1.00
104	11820	M	15	5	17	4.69	137.44	17.03	5----1.00
105	11821	M	120	5	121	3.83	244.75	22.33	5----1.00
106	11822	M	90	5	92	3.14	133.28	17.50	5----1.00
107	11823	M	120	5	121	4.02	206.00	19.39	5----1.00

108	11824	M	90	5	92	3.84	115.98	20.27	5----1.00
109	11825	M	15	5	18	4.92	133.18	20.87	5----1.00
110	11826	M	120	5	121	3.81	206.00	22.63	5----1.00
111	11827	M	90	5	93	3.32	112.16	18.98	5----1.00
112	11828	M	120	5	121	4.16	223.91	23.48	5----1.00

1 The SAS System 08:42 Thursday, August 23, 2001 3

OBS	ANIM	GENDER	DAY	DOSE	STUDYDAY	T4	T3	TSH	TRT
113	11829	M	120	5	122	3.51	254.48	20.96	5----1.00
114	11830	M	90	5	93	3.59	103.33	21.52	5----1.00
115	11831	M	15	5	16	6.06	101.61	18.72	5----1.00
116	11832	M	90	5	94	2.79	112.78	20.06	5----1.00
117	11833	M	120	5	122	4.27	195.01	21.06	5----1.00
118	11834	M	120	5	122	3.92	202.03	24.20	5----1.00
119	11835	M	15	5	15	4.81	125.91	21.75	5----1.00
120	11836	M	15	5	17	4.86	109.93	16.11	5----1.00
121	11837	M	120	5	123	4.29	183.56	21.72	5----1.00
122	11838	M	120	5	123	3.68	194.21	23.70	5----1.00
123	11839	M	15	5	16	5.24	124.57	17.48	5----1.00
124	11840	M	90	5	94	3.20	138.69	17.42	5----1.00
125	11841	M	90	5	94	3.61	129.19	18.96	5----1.00
126	11842	M	90	5	95	3.82	114.27	18.97	5----1.00
127	11843	M	120	5	123	4.39	206.09	22.05	5----1.00
128	11844	M	15	5	17	5.74	112.27	18.45	5----1.00
129	11845	M	90	5	95	3.49	123.71	19.41	5----1.00
130	11846	M	15	6	17	3.99	105.59	25.16	6---10.00
131	11847	M	15	6	16	4.19	117.76	26.50	6---10.00
132	11848	M	15	6	15	4.69	122.59	22.67	6---10.00
133	11849	M	120	6	121	3.46	190.62	22.86	6---10.00
134	11850	M	120	6	121	3.18	185.98	21.11	6---10.00
135	11851	M	90	6	92	2.75	106.87	19.09	6---10.00
136	11852	M	90	6	92	2.57	116.65	20.13	6---10.00
137	11853	M	15	6	18	3.79	128.35	24.52	6---10.00
138	11854	M	90	6	92	2.97	112.98	18.47	6---10.00
139	11855	M	120	6	121	3.81	180.99	20.10	6---10.00
140	11856	M	120	6	122	2.76	219.28	21.07	6---10.00
141	11857	M	15	6	17	4.69	135.80	26.22	6---10.00
142	11858	M	15	6	17	3.99	146.43	27.80	6---10.00
143	11859	M	15	6	16	3.91	110.88	21.02	6---10.00
144	11860	M	90	6	93	2.67	119.68	22.82	6---10.00
145	11861	M	15	6	15	4.75	114.73	23.81	6---10.00
146	11862	M	90	6	93	3.10	104.26	20.88	6---10.00
147	11863	M	15	6	18	4.78	114.40	22.24	6---10.00
148	11864	M	120	6	122	3.79	195.49	28.12	6---10.00
149	11865	M	120	6	122	3.51	176.59	20.70	6---10.00
150	11866	M	90	6	94	3.09	147.54	17.05	6---10.00
151	11867	M	90	6	94	2.86	120.92	16.19	6---10.00
152	11868	M	120	6	122	3.35	194.26	24.69	6---10.00
153	11869	M	120	6	123	3.63	165.40	24.10	6---10.00
154	11870	M	15	6	15	4.33	132.63	20.43	6---10.00
155	11871	M	90	6	94	2.73	119.44	18.40	6---10.00
156	11872	M	90	6	95	2.58	113.67	19.99	6---10.00
157	11873	M	90	6	95	3.53	109.46	17.55	6---10.00
158	11874	M	120	6	123	3.54	174.10	23.61	6---10.00
159	11875	M	120	6	123	3.29	163.56	21.52	6---10.00
160	11876	F	90	1	92	3.73	208.41	17.32	1-CONTROL
161	11877	F	15	1	16	4.89	133.28	9.89	1-CONTROL
162	11878	F	15	1	15	4.23	146.98	9.49	1-CONTROL
163	11879	F	120	1	121	2.93	218.73	12.16	1-CONTROL
164	11880	F	120	1	121	3.25	247.56	12.15	1-CONTROL
165	11881	F	15	1	15	4.45	148.52	9.00	1-CONTROL
166	11882	F	15	1	16	4.33	113.01	10.51	1-CONTROL

1	167	11883	F	120	1	121	3.12	269.33	11.21	1-CONTROL
	168	11884	F	15	1	17	4.87	141.79	10.86	1-CONTROL
The SAS System										
	169	11885	F	120	1	122	3.50	208.59	14.29	1-CONTROL
	170	11886	F	90	1	92	4.39	176.30	17.27	1-CONTROL
	171	11887	F	120	1	122	4.02	221.72	12.48	1-CONTROL
	172	11888	F	120	1	122	3.53	221.68	14.27	1-CONTROL
	173	11889	F	15	1	16	3.47	115.12	11.30	1-CONTROL
	174	11890	F	90	1	93	4.11	156.30	16.97	1-CONTROL
	175	11891	F	90	1	93	4.38	184.05	13.65	1-CONTROL
	176	11892	F	90	1	93	4.70	162.70	16.06	1-CONTROL
	177	11893	F	15	1	17	4.81	125.46	10.27	1-CONTROL
	178	11894	F	15	1	18	4.36	155.28	11.15	1-CONTROL
	179	11895	F	90	1	94	4.10	174.56	16.51	1-CONTROL
	180	11896	F	90	1	94	5.28	178.38	17.15	1-CONTROL
	181	11897	F	120	1	122	3.76	233.84	12.22	1-CONTROL
	182	11898	F	120	1	123	3.70	204.67	12.56	1-CONTROL
	183	11899	F	120	1	123	3.67	201.68	15.44	1-CONTROL
	184	11900	F	15	1	18	4.75	117.27	10.57	1-CONTROL
	185	11901	F	90	1	95	4.75	157.34	15.31	1-CONTROL
	186	11902	F	90	1	95	4.25	154.03	19.14	1-CONTROL
	187	11903	F	15	1	18	4.72	133.24	11.36	1-CONTROL
	188	11904	F	90	1	95	4.72	148.72	15.41	1-CONTROL
	189	11905	F	120	1	123	3.41	209.42	13.98	1-CONTROL
	190	11906	F	15	2	18	4.48	144.32	11.86	2----0.01
	191	11907	F	90	2	92	3.61	161.10	17.85	2----0.01
	192	11908	F	15	2	15	4.39	134.14	11.83	2----0.01
	193	11909	F	15	2	15	4.59	134.16	10.33	2----0.01
	194	11910	F	90	2	92	3.73	133.70	15.76	2----0.01
	195	11911	F	15	2	16	4.58	134.89	10.03	2----0.01
	196	11912	F	15	2	16	4.74	142.55	13.47	2----0.01
	197	11913	F	15	2	16	4.60	113.00	10.78	2----0.01
	198	11914	F	90	2	93	3.60	153.42	17.47	2----0.01
	199	11915	F	90	2	93	3.36	140.29	14.80	2----0.01
	200	11916	F	90	2	93	3.18	122.90	19.76	2----0.01
	201	11917	F	15	2	18	3.24	147.24	13.71	2----0.01
	202	11918	F	90	2	94	3.30	126.23	19.48	2----0.01
	203	11919	F	90	2	94	3.10	136.10	15.89	2----0.01
	204	11920	F	90	2	95	3.46	158.85	16.64	2----0.01
	205	11921	F	15	2	17	4.44	128.84	11.46	2----0.01
	206	11922	F	90	2	95	4.29	134.94	14.45	2----0.01
	207	11923	F	15	2	18	3.83	145.91	11.36	2----0.01
	208	11924	F	90	2	95	3.58	163.78	15.73	2----0.01
	209	11925	F	15	2	17	4.34	115.29	12.35	2----0.01
	210	11926	F	120	3	121	3.67	211.08	14.44	3----0.05
	211	11927	F	90	3	92	4.15	158.08	15.59	3----0.05
	212	11928	F	120	3	121	3.04	204.05	17.93	3----0.05
	213	11929	F	90	3	92	3.80	126.88	18.02	3----0.05
	214	11930	F	15	3	15	4.20	125.94	11.10	3----0.05
	215	11931	F	15	3	15	4.37	145.96	11.46	3----0.05
	216	11932	F	120	3	121	3.15	221.45	13.94	3----0.05
	217	11933	F	120	3	122	3.84	218.24	15.58	3----0.05
	218	11934	F	15	3	16	4.80	132.98	12.22	3----0.05
	219	11935	F	90	3	93	3.41	156.25	17.08	3----0.05
	220	11936	F	90	3	93	3.11	147.68	15.48	3----0.05
	221	11937	F	90	3	93	3.28	110.79	16.63	3----0.05
	222	11938	F	90	3	94	3.12	139.42	19.78	3----0.05
	223	11939	F	90	3	94	3.25	135.47	15.18	3----0.05
	224	11940	F	120	3	122	3.03	258.55	16.66	3----0.05

The SAS System 08:42 Thursday, August 23, 2001 5

OBS	ANIM	GENDER	DAY	DOSE	STUDYDAY	T4	T3	TSH	TRT
225	11941	F	15	3	17	4.86	111.65	13.98	3----0.05
226	11942	F	15	3	17	4.03	130.30	11.33	3----0.05
227	11943	F	120	3	122	3.88	214.89	13.95	3----0.05
228	11944	F	120	3	122	3.45	207.28	15.61	3----0.05
229	11945	F	15	3	16	4.40	131.63	13.56	3----0.05
230	11946	F	15	3	18	3.95	147.82	12.23	3----0.05
231	11947	F	120	3	123	3.23	203.40	14.29	3----0.05
232	11948	F	120	3	97	.	.	.	3----0.05
233	11949	F	120	3	123	2.94	205.03	18.39	3----0.05
234	11950	F	90	3	95	3.70	162.59	19.24	3----0.05
235	11951	F	15	3	18	4.27	144.64	13.57	3----0.05
236	11952	F	15	3	18	3.51	142.07	11.93	3----0.05
237	11953	F	15	3	16	4.16	114.53	12.01	3----0.05
238	11954	F	90	3	95	3.10	147.70	16.32	3----0.05
239	11955	F	90	3	95	3.03	144.15	15.13	3----0.05
240	11956	F	90	4	92	4.19	127.84	15.39	4----0.20
241	11957	F	90	4	92	3.40	113.07	17.08	4----0.20
242	11958	F	90	4	93	3.25	123.47	17.42	4----0.20
243	11959	F	15	4	16	4.25	128.36	10.56	4----0.20
244	11960	F	15	4	17	5.02	112.29	13.46	4----0.20
245	11961	F	90	4	93	3.19	151.66	17.53	4----0.20
246	11962	F	15	4	17	4.41	109.23	14.15	4----0.20
247	11963	F	15	4	15	4.20	140.54	10.88	4----0.20
248	11964	F	15	4	16	3.32	119.77	14.12	4----0.20
249	11965	F	90	4	93	3.35	149.43	16.31	4----0.20
250	11966	F	90	4	94	3.19	120.01	15.26	4----0.20
251	11967	F	15	4	18	4.56	137.82	11.46	4----0.20
252	11968	F	15	4	16	4.11	133.36	12.00	4----0.20
253	11969	F	90	4	94	3.32	154.35	19.95	4----0.20
254	11970	F	15	4	18	3.72	134.40	12.23	4----0.20
255	11971	F	15	4	15	4.04	134.22	12.46	4----0.20
256	11972	F	90	4	95	3.70	147.47	19.64	4----0.20
257	11973	F	90	4	95	3.18	140.71	17.38	4----0.20
258	11974	F	15	4	.	.	.	.	4----0.20
259	11975	F	90	4	95	3.10	137.11	17.83	4----0.20
260	11976	M	15	4	18	5.05	150.73	18.80	4----0.20
261	11976	F	90	5	92	3.02	122.86	17.75	5----1.00
262	11977	F	15	5	16	4.02	139.95	13.07	5----1.00
263	11978	F	120	5	121	3.34	205.43	16.46	5----1.00
264	11979	F	120	5	121	3.83	229.47	15.81	5----1.00
265	11980	F	120	5	121	2.77	219.83	15.98	5----1.00
266	11981	F	120	5	122	3.14	228.10	16.03	5----1.00
267	11982	F	15	5	18	3.45	122.78	12.33	5----1.00
268	11983	F	90	5	92	3.10	116.09	18.81	5----1.00
269	11984	F	15	5	17	4.30	109.93	10.13	5----1.00
270	11985	F	120	5	122	3.51	232.28	16.24	5----1.00
271	11986	F	120	5	122	2.97	193.81	17.84	5----1.00
272	11987	F	120	5	122	2.97	202.03	12.35	5----1.00
273	11988	F	90	5	93	3.41	116.59	16.26	5----1.00
274	11989	F	15	5	16	4.46	121.80	12.02	5----1.00
275	11990	F	90	5	93	2.90	107.73	19.20	5----1.00
276	11991	F	15	5	18	3.67	117.29	13.48	5----1.00
277	11992	F	15	5	18	3.81	127.88	11.70	5----1.00
278	11993	F	90	5	93	3.78	135.30	18.76	5----1.00
279	11994	F	15	5	16	4.60	138.22	12.48	5----1.00
280	11995	F	90	5	.	.	.	.	5----1.00

The SAS System

08:42 Thursday, August 23, 2001 6

1

281	11996	F	90	5	94	3.43	117.29	15.69	5----1.00
282	11997	F	90	5	95	3.18	137.19	18.27	5----1.00
283	11998	F	90	5	95	2.79	124.03	14.97	5----1.00
284	11999	F	120	5	123	3.34	180.62	14.78	5----1.00
285	12000	F	90	5	95	3.04	125.61	18.93	5----1.00
286	12001	F	15	5	15	4.61	108.50	13.14	5----1.00
287	12002	F	120	5	123	3.31	246.40	16.60	5----1.00
288	12003	F	15	5	17	4.05	135.76	14.91	5----1.00
289	12004	F	120	5	123	3.41	208.65	15.44	5----1.00
290	12005	F	15	5	15	4.07	129.06	12.63	5----1.00
291	12006	F	90	6	92	2.92	126.60	20.28	6---10.00
292	12007	F	90	6	92	2.50	111.83	19.83	6---10.00
293	12008	F	120	6	121	3.31	195.96	17.08	6---10.00
294	12009	F	120	6	121	2.87	215.38	17.25	6---10.00
295	12010	F	15	6	15	4.07	137.80	15.15	6---10.00
296	12011	F	90	6	93	3.22	137.55	20.37	6---10.00
297	12012	F	90	6	93	2.92	129.39	18.10	6---10.00
298	12013	F	15	6	17	3.59	131.10	17.43	6---10.00
299	12014	F	120	6	121	3.81	172.26	16.07	6---10.00
300	12015	F	120	6	122	2.71	167.80	15.84	6---10.00
301	12016	F	15	6	16	3.79	117.79	16.54	6---10.00
302	12017	F	120	6	122	2.93	180.85	17.41	6---10.00
303	12018	F	90	6	93	2.95	136.33	20.36	6---10.00
304	12019	F	90	6	94	3.49	105.91	18.91	6---10.00
305	12020	F	120	6	122	2.83	214.31	18.24	6---10.00
306	12021	F	15	6	15	4.16	122.40	14.00	6---10.00
307	12022	F	90	6	94	3.11	124.02	21.38	6---10.00
308	12023	F	15	6	16	3.54	137.35	15.40	6---10.00
309	12024	F	120	6	123	3.40	182.94	14.44	6---10.00
310	12025	F	90	6	95	3.03	100.54	16.93	6---10.00
311	12026	F	15	6	18	3.09	109.03	19.37	6---10.00
312	12027	F	120	6	123	2.96	197.80	15.30	6---10.00
313	12028	F	15	6	16	3.42	126.12	14.76	6---10.00
314	12029	F	90	6	95	3.08	121.42	21.55	6---10.00
315	12030	F	15	6	17	3.40	112.99	17.88	6---10.00
316	12031	F	15	6	18	3.98	119.65	17.14	6---10.00
317	12032	F	15	6	18	3.35	130.08	17.94	6---10.00
318	12033	F	90	6	95	2.69	124.70	22.59	6---10.00
319	12034	F	120	6	123	3.23	213.65	14.55	6---10.00
320	12035	F	120	6	123	2.90	230.29	14.03	6---10.00

1

The SAS System

08:42 Thursday, August 23, 2001 7

Analysis Variable : T4

----- DAY=120 TRT=1-CONTROL GENDER=F -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
10	3.4890000	0.1025503	2.9300000	4.0200000	0.3242924	0.1051656	9.2947089

----- DAY=120 TRT=1-CONTROL GENDER=M -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
10	4.9500000	0.1501851	3.7000000	5.3900000	0.4749269	0.2255556	9.5944827

----- DAY=120 TRT=3----0.05 GENDER=F -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
9	3.3588889	0.1209734	2.9400000	3.8800000	0.3629203	0.1317111	10.8047711

----- DAY=120 TRT=3----0.05 GENDER=M -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
10	4.0430000	0.1205271	3.3900000	4.6400000	0.3811401	0.1452678	9.4271606

----- DAY=120 TRT=5----1.00 GENDER=F -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
10	3.2590000	0.0970618	2.7700000	3.8300000	0.3069365	0.0942100	9.4181183

----- DAY=120 TRT=5----1.00 GENDER=M -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
10	3.9880000	0.0911385	3.5100000	4.3900000	0.2882052	0.0830622	7.2268098

----- DAY=120 TRT=6---10.00 GENDER=F -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
10	3.0950000	0.1065233	2.7100000	3.8100000	0.3368564	0.1134722	10.8838896

1 The SAS System 08:42 Thursday, August 23, 2001 8

Analysis Variable : T4

----- DAY=120 TRT=6---10.00 GENDER=M -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
10	3.4320000	0.0983621	2.7600000	3.8100000	0.3110484	0.0967511	9.0631820

----- DAY=15 TRT=1-CONTROL GENDER=F -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
10	4.4880000	0.1366000	3.4700000	4.8900000	0.4319671	0.1865956	9.6249349

----- DAY=15 TRT=1-CONTROL GENDER=M -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV

10	5.6440000	0.1853837	4.8400000	6.6400000	0.5862347	0.3436711	10.3868655
----	-----------	-----------	-----------	-----------	-----------	-----------	------------

----- DAY=15 TRT=2----0.01 GENDER=F -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
10	4.3230000	0.1432562	3.2400000	4.7400000	0.4530158	0.2052233	10.4792001

----- DAY=15 TRT=2----0.01 GENDER=M -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
5	5.2540000	0.3062123	4.2300000	6.0300000	0.6847116	0.4688300	13.0321968

----- DAY=15 TRT=3----0.05 GENDER=F -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
10	4.2550000	0.1250889	3.5100000	4.8600000	0.3955657	0.1564722	9.2964912

----- DAY=15 TRT=3----0.05 GENDER=M -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
9	5.2133333	0.1019531	4.6500000	5.5800000	0.3058594	0.0935500	5.8668691

1 The SAS System 08:42 Thursday, August 23, 2001 9

Analysis Variable : T4

----- DAY=15 TRT=4----0.20 GENDER=F -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
9	4.1811111	0.1617564	3.3200000	5.0200000	0.4852691	0.2354861	11.6062238

----- DAY=15 TRT=4----0.20 GENDER=M -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
10	5.1570000	0.1215552	4.3600000	5.5900000	0.3843913	0.1477567	7.4537773

----- DAY=15 TRT=5----1.00 GENDER=F -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
10	4.1040000	0.1238655	3.4500000	4.6100000	0.3916972	0.1534267	9.5442778

----- DAY=15 TRT=5----1.00 GENDER=M -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
10	5.1910000	0.1457963	4.6900000	6.0600000	0.4610483	0.2125656	8.8816860

----- DAY=15 TRT=6---10.00 GENDER=F -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
10	3.6390000	0.1104783	3.0900000	4.1600000	0.3493629	0.1220544	9.6005197

----- DAY=15 TRT=6---10.00 GENDER=M -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
10	4.3110000	0.1226236	3.7900000	4.7800000	0.3877700	0.1503656	8.9948963

----- DAY=90 TRT=1-CONTROL GENDER=F -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
10	4.4410000	0.1381822	3.7300000	5.2800000	0.4369706	0.1909433	9.8394648

1

The SAS System

08:42 Thursday, August 23, 2001 10

Analysis Variable : T4

----- DAY=90 TRT=1-CONTROL GENDER=M -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
10	5.0600000	0.1722466	4.3700000	6.3500000	0.5446916	0.2966889	10.7646552

----- DAY=90 TRT=2----0.01 GENDER=F -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
10	3.5210000	0.1067026	3.1000000	4.2900000	0.3374232	0.1138544	9.5831651

----- DAY=90 TRT=2----0.01 GENDER=M -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
10	4.3560000	0.1474012	3.2200000	4.7900000	0.4661235	0.2172711	10.7007230

----- DAY=90 TRT=3----0.05 GENDER=F -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
10	3.3950000	0.1173149	3.0300000	4.1500000	0.3709822	0.1376278	10.9273102

----- DAY=90 TRT=3----0.05 GENDER=M -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
10	3.6320000	0.1130467	3.1600000	4.0600000	0.3574850	0.1277956	9.8426498

----- DAY=90 TRT=4----0.20 GENDER=F -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
10	3.3870000	0.1038380	3.1000000	4.1900000	0.3283646	0.1078233	9.6948519

----- DAY=90 TRT=4----0.20 GENDER=M -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
10	3.4950000	0.1144965	2.9200000	4.0500000	0.3620697	0.1310944	10.3596472

1 The SAS System 08:42 Thursday, August 23, 2001 11

Analysis Variable : T4

----- DAY=90 TRT=5----1.00 GENDER=F -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
9	3.1833333	0.1025643	2.7900000	3.7800000	0.3076930	0.0946750	9.6657496

----- DAY=90 TRT=5----1.00 GENDER=M -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
10	3.4670000	0.11115751	2.7900000	3.8700000	0.3528314	0.1244900	10.1768504

----- DAY=90 TRT=6---10.00 GENDER=F -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
10	2.9910000	0.0861839	2.5000000	3.4900000	0.2725375	0.0742767	9.1119177

----- DAY=90 TRT=6---10.00 GENDER=M -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
10	2.8850000	0.0938586	2.5700000	3.5300000	0.2968071	0.0880944	10.2879405

1

The SAS System

08:42 Thursday, August 23, 2001 12

Analysis Variable : T4

----- DAY=120 TRT=1-CONTROL -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
20	4.2195000	0.1895222	2.9300000	5.3900000	0.8475691	0.7183734	20.0869564

----- DAY=120 TRT=3---0.05 -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
19	3.7189474	0.1156975	2.9400000	4.6400000	0.5043136	0.2543322	13.5606532

----- DAY=120 TRT=5---1.00 -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
20	3.6235000	0.1057885	2.7700000	4.3900000	0.4731004	0.2238239	13.0564470

----- DAY=120 TRT=6---10.00 -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
20	3.2635000	0.0804568	2.7100000	3.8100000	0.3598139	0.1294661	11.0253995

----- DAY=15 TRT=1-CONTROL -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
20	5.0660000	0.1736154	3.4700000	6.6400000	0.7764318	0.6028463	15.3263282

----- DAY=15 TRT=2---0.01 -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
15	4.6333333	0.1774359	3.2400000	6.0300000	0.6872062	0.4722524	14.8317888

----- DAY=15 TRT=3---0.05 -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
19	4.7089474	0.1379357	3.5100000	5.5800000	0.6012477	0.3614988	12.7681981

1

The SAS System

08:42 Thursday, August 23, 2001 13

Analysis Variable : T4

----- DAY=15 TRT=4 ----- 0.20 -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
19	4.6947368	0.1502909	3.3200000	5.5900000	0.6551028	0.4291596	13.9539829

----- DAY=15 TRT=5 ----- 1.00 -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
20	4.6475000	0.1556123	3.4500000	6.0600000	0.6959195	0.4843039	14.9740613

----- DAY=15 TRT=6 ----- 10.00 -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
20	3.9750000	0.1113281	3.0900000	4.7800000	0.4978744	0.2478789	12.5251429

----- DAY=90 TRT=1-CONTROL -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
20	4.7505000	0.1288052	3.7300000	6.3500000	0.5760343	0.3318155	12.1257617

----- DAY=90 TRT=2 ----- 0.01 -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
20	3.9385000	0.1304472	3.1000000	4.7900000	0.5833774	0.3403292	14.8121726

----- DAY=90 TRT=3 ----- 0.05 -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
20	3.5135000	0.0838177	3.0300000	4.1500000	0.3748442	0.1405082	10.6686830

----- DAY=90 TRT=4 ----- 0.20 -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
20	3.4410000	0.0762368	2.9200000	4.1900000	0.3409414	0.1162411	9.9082075

Analysis Variable : T4

----- DAY=90 TRT=5----1.00 -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
19	3.3326316	0.0812722	2.7900000	3.8700000	0.3542573	0.1254982	10.6299574

----- DAY=90 TRT=6---10.00 -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
20	2.9380000	0.0631939	2.5000000	3.5300000	0.2826119	0.0798695	9.6191926

1 The SAS System 08:42 Thursday, August 23, 2001 15

Analysis Variable : T4

----- GENDER=F TRT=1-CONTROL -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
30	4.1393333	0.1108970	2.9300000	5.2800000	0.6074079	0.3689444	14.6740516

----- GENDER=F TRT=2---0.01 -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
20	3.9220000	0.1265714	3.1000000	4.7400000	0.5660444	0.3204063	14.4325458

----- GENDER=F TRT=3---0.05 -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
29	3.6803448	0.1037896	2.9400000	4.8600000	0.5589242	0.3123963	15.1867356

----- GENDER=F TRT=4---0.20 -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
19	3.7631579	0.1306910	3.1000000	5.0200000	0.5696690	0.3245228	15.1380582

----- GENDER=F TRT=5---1.00 -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
29	3.5268966	0.0998559	2.7700000	4.6100000	0.5377407	0.2891650	15.2468511

----- GENDER=F TRT=6---10.00 -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
30	3.2416667	0.0773885	2.5000000	4.1600000	0.4238744	0.1796695	13.0758182

----- GENDER=M TRT=1-CONTROL -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
30	5.2180000	0.1102551	3.7000000	6.6400000	0.6038920	0.3646855	11.5732460

1 The SAS System 08:42 Thursday, August 23, 2001 16

Analysis Variable : T4

----- GENDER=M TRT=2---0.01 -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
15	4.6553333	0.1761868	3.2200000	6.0300000	0.6823684	0.4656267	14.6577780

----- GENDER=M TRT=3---0.05 -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
29	4.2644828	0.1394911	3.1600000	5.5800000	0.7511828	0.5642756	17.6148634

----- GENDER=M TRT=4---0.20 -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
20	4.3260000	0.2072431	2.9200000	5.5900000	0.9268191	0.8589937	21.4243902

----- GENDER=M TRT=5---1.00 -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
30	4.2153333	0.1493940	2.7900000	6.0600000	0.8182645	0.6695568	19.4116201

----- GENDER=M TRT=6---10.00 -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
30	3.5426667	0.1239577	2.5700000	4.7800000	0.6789441	0.4609651	19.1647744

1 WPAFB 90-DAY PERCHLORATE - T4 DATA 08:42 Thursday, August 23, 2001 17  
PROC GLMs BY DAY - GENDER BY TRT INTERACTIONS

----- DAY=120 -----

General Linear Models Procedure  
Class Level Information

Class	Levels	Values
GENDER	2	F M
TRT	4	1-CONTROL 3----0.05 5----1.00 6---10.00

Number of observations in by group = 80

NOTE: Due to missing values, only 79 observations can be used in this analysis.

1 WPAFB 90-DAY PERCHLORATE - T4 DATA 08:42 Thursday, August 23, 2001 18  
 PROC GLMs BY DAY - GENDER BY TRT INTERACTIONS

---

----- DAY=120 -----

#### General Linear Models Procedure

Dependent Variable: T4

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	7	25.44361187	3.63480170	29.24	0.0001
Error	71	8.82504889	0.12429646		
Corrected Total	78	34.26866076			

R-Square	C.V.	Root MSE	T4 Mean
0.742475	9.512622	0.35255704	3.70620253

Source	DF	Type I SS	Mean Square	F Value	Pr > F
GENDER	1	12.77342429	12.77342429	102.77	0.0001
TRT	3	9.32529087	3.10843029	25.01	0.0001
GENDER*TRT	3	3.34489671	1.11496557	8.97	0.0001

  

Source	DF	Type III SS	Mean Square	F Value	Pr > F
GENDER	1	12.71248097	12.71248097	102.28	0.0001
TRT	3	9.32503484	3.10834495	25.01	0.0001
GENDER*TRT	3	3.34489671	1.11496557	8.97	0.0001

1 WPAFB 90-DAY PERCHLORATE - T4 DATA 08:42 Thursday, August 23, 2001 19  
 PROC GLMs BY DAY - GENDER BY TRT INTERACTIONS

---

----- DAY=15 -----

#### General Linear Models Procedure

##### Class Level Information

Class	Levels	Values
GENDER	2	F M
TRT	6	1-CONTROL 2----0.01 3----0.05 4----0.20 5----1.00 6---10.00

Number of observations in by group = 120

NOTE: Due to missing values, only 113 observations can be used in this analysis.

1 WPAFB 90-DAY PERCHLORATE - T4 DATA 08:42 Thursday, August 23, 2001 20  
PROC GLMs BY DAY - GENDER BY TRT INTERACTIONS

----- DAY=15 -----

#### General Linear Models Procedure

Dependent Variable: T4

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	11	39.17108368	3.56100761	18.34	0.0001
Error	101	19.61078889	0.19416623		
Corrected Total	112	58.78187257			
		R-Square	C.V.	Root MSE	T4 Mean
		0.666380	9.539919	0.44064297	4.61893805
Source	DF	Type I SS	Mean Square	F Value	Pr > F
GENDER	1	25.46925323	25.46925323	131.17	0.0001
TRT	5	13.01113655	2.60222731	13.40	0.0001
GENDER*TRT	5	0.69069390	0.13813878	0.71	0.6162
Source	DF	Type III SS	Mean Square	F Value	Pr > F
GENDER	1	25.26880004	25.26880004	130.14	0.0001
TRT	5	12.95229043	2.59045809	13.34	0.0001
GENDER*TRT	5	0.69069390	0.13813878	0.71	0.6162

1 WPAFB 90-DAY PERCHLORATE - T4 DATA 08:42 Thursday, August 23, 2001 21  
PROC GLMs BY DAY - GENDER BY TRT INTERACTIONS

----- DAY=90 -----

#### General Linear Models Procedure

##### Class Level Information

Class	Levels	Values
GENDER	2	F M
TRT	6	1-CONTROL 2---0.01 3---0.05 4---0.20 5---1.00 6---10.00

Number of observations in by group = 120

NOTE: Due to missing values, only 119 observations can be used in this analysis.

1 WPAFB 90-DAY PERCHLORATE - T4 DATA 08:42 Thursday, August 23, 2001 22

## PROC GLMs BY DAY - GENDER BY TRT INTERACTIONS

----- DAY=90 -----

## General Linear Models Procedure

Dependent Variable: T4

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	11	45.36093479	4.12372134	28.94	0.0001
Error	107	15.24704000	0.14249570		
Corrected Total	118	60.60797479			
		R-Square	C.V.	Root MSE	T4 Mean
		0.748432	10.32782	0.37748603	3.65504202
Source	DF	Type I SS	Mean Square	F Value	Pr > F
GENDER	1	3.12875374	3.12875374	21.96	0.0001
TRT	5	39.28913777	7.85782755	55.14	0.0001
GENDER*TRT	5	2.94304327	0.58860865	4.13	0.0018
Source	DF	Type III SS	Mean Square	F Value	Pr > F
GENDER	1	3.22613761	3.22613761	22.64	0.0001
TRT	5	39.26915973	7.85383195	55.12	0.0001
GENDER*TRT	5	2.94304327	0.58860865	4.13	0.0018

1

WPAFB 90-DAY PERCHLORATE - T4 DATA  
 PROC GLM - STEPDOWN ANOVAS - MAIN EFFECT OF TRT  
 NOTE: T4 DATA DAY 14 ONLY -- CONSERVATIVE APPROACH

08:42 Thursday, August 23, 2001 23

General Linear Models Procedure  
Class Level Information

Class	Levels	Values
TRT	6	1-CONTROL 2---0.01 3---0.05 4---0.20 5---1.00 6---10.00
GENDER	2	F M

Number of observations in data set = 120

NOTE: Due to missing values, only 113 observations can be used in this analysis.

1

WPAFB 90-DAY PERCHLORATE - T4 DATA  
 PROC GLM - STEPDOWN ANOVAS - MAIN EFFECT OF TRT  
 NOTE: T4 DATA DAY 14 ONLY -- CONSERVATIVE APPROACH

08:42 Thursday, August 23, 2001 24

## General Linear Models Procedure

Dependent Variable: T4

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F

Model	11	39.17108368	3.56100761	18.34	0.0001
Error	101	19.61078889	0.19416623		
Corrected Total	112	58.78187257			
R-Square		C.V.	Root MSE	T4 Mean	
0.666380		9.539919	0.44064297	4.61893805	
Source	DF	Type I SS	Mean Square	F Value	Pr > F
TRT	5	12.57293160	2.51458632	12.95	0.0001
GENDER	1	25.90745818	25.90745818	133.43	0.0001
TRT*GENDER	5	0.69069390	0.13813878	0.71	0.6162
Source	DF	Type III SS	Mean Square	F Value	Pr > F
TRT	5	12.95229043	2.59045809	13.34	0.0001
GENDER	1	25.26880004	25.26880004	130.14	0.0001
TRT*GENDER	5	0.69069390	0.13813878	0.71	0.6162

1 WPAFB 90-DAY PERCHLORATE - T4 DATA 08:42 Thursday, August 23, 2001 25  
 PROC GLM - STEPDOWN ANOVAS - MAIN EFFECT OF TRT  
 NOTE: T4 DATA DAY 14 ONLY -- CONSERVATIVE APPROACH

#### General Linear Models Procedure

#### Duncan's Multiple Range Test for variable: T4

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha= 0.05 df= 101 MSE= 0.194166  
 WARNING: Cell sizes are not equal.  
 Harmonic Mean of cell sizes= 18.6376

Number of Means 2 3 4 5 6  
 Critical Range .2863 .3013 .3113 .3186 .3243

Means with the same letter are not significantly different.

Duncan Grouping	Mean	N	TRT
A	5.0660	20	1-CONTROL
B	4.7089	19	3----0.05
B	4.6947	19	4----0.20
B	4.6475	20	5----1.00
B	4.6333	15	2----0.01
C	3.9750	20	6---10.00

1 WPAFB 90-DAY PERCHLORATE - T4 DATA 08:42 Thursday, August 23, 2001 26  
 PROC GLM - STEPDOWN ANOVAS - MAIN EFFECT OF TRT

NOTE: T4 DATA DAY 14 ONLY - LIBERAL APPROACH

General Linear Models Procedure  
Class Level Information

Class	Levels	Values
TRT	6	1-CONTROL 2---0.01 3---0.05 4---0.20 5---1.00 6---10.00
GENDER	2	F M

Number of observations in data set = 120

NOTE: Due to missing values, only 113 observations can be used in this analysis.

1 WPAFB 90-DAY PERCHLORATE - T4 DATA 08:42 Thursday, August 23, 2001 27  
PROC GLM - STEPDOWN ANOVAS - MAIN EFFECT OF TRT  
NOTE: T4 DATA DAY 14 ONLY - LIBERAL APPROACH

General Linear Models Procedure

Dependent Variable: T4

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	6	38.48038978	6.41339830	33.49	0.0001
Error	106	20.30148279	0.19152342		
Corrected Total	112	58.78187257			
R-Square		C.V.	Root MSE		T4 Mean
0.654630		9.474773	0.43763389		4.61893805

Source	DF	Type I SS	Mean Square	F Value	Pr > F
TRT	5	12.57293160	2.51458632	13.13	0.0001
GENDER	1	25.90745818	25.90745818	135.27	0.0001
Source	DF	Type III SS	Mean Square	F Value	Pr > F
TRT	5	13.01113655	2.60222731	13.59	0.0001
GENDER	1	25.90745818	25.90745818	135.27	0.0001

1 WPAFB 90-DAY PERCHLORATE - T4 DATA 08:42 Thursday, August 23, 2001 28  
PROC GLM - STEPDOWN ANOVAS - MAIN EFFECT OF TRT  
NOTE: T4 DATA DAY 14 ONLY - LIBERAL APPROACH

General Linear Models Procedure

Duncan's Multiple Range Test for variable: T4

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha= 0.05 df= 106 MSE= 0.191523  
WARNING: Cell sizes are not equal.  
Harmonic Mean of cell sizes= 18.6376

Number of Means	2	3	4	5	6
Critical Range	.2842	.2991	.3090	.3163	.3219

Means with the same letter are not significantly different.

Duncan Grouping	Mean	N	TRT
A	5.0660	20	1-CONTROL
B	4.7089	19	3----0.05
B	4.6947	19	4----0.20
B	4.6475	20	5----1.00
B	4.6333	15	2----0.01
C	3.9750	20	6---10.00

1 WPAFB 90-DAY PERCHLORATE - T4 DATA 08:42 Thursday, August 23, 2001 29  
 PROC GLM - STEPDOWN ANOVAS BY DAY AND GENDER - MAIN EFFECT OF TREATMENT  
 NOTE: T4 DATA FOR DAY 90 AND 120 ONLY

----- DAY=120 GENDER=F -----

General Linear Models Procedure  
 Class Level Information

Class	Levels	Values
TRT	4	1-CONTROL 3----0.05 5----1.00 6---10.00

Number of observations in by group = 40

NOTE: Due to missing values, only 39 observations can be used in this analysis.

1 WPAFB 90-DAY PERCHLORATE - T4 DATA 08:42 Thursday, August 23, 2001 30  
 PROC GLM - STEPDOWN ANOVAS BY DAY AND GENDER - MAIN EFFECT OF TREATMENT  
 NOTE: T4 DATA FOR DAY 90 AND 120 ONLY

----- DAY=120 GENDER=F -----

General Linear Models Procedure

Dependent Variable: T4

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	3	0.82544009	0.27514670	2.49	0.0764
Error	35	3.86931889	0.11055197		
Corrected Total	38	4.69475897			
R-Square		C.V.	Root MSE	T4 Mean	
0.175822		10.07869	0.33249356	3.29897436	

Source	DF	Type I SS	Mean Square	F Value	Pr > F
TRT	3	0.82544009	0.27514670	2.49	0.0764
Source	DF	Type III SS	Mean Square	F Value	Pr > F
TRT	3	0.82544009	0.27514670	2.49	0.0764

1 WPAFB 90-DAY PERCHLORATE - T4 DATA 08:42 Thursday, August 23, 2001 31  
 PROC GLM - STEPDOWN ANOVAS BY DAY AND GENDER - MAIN EFFECT OF TREATMENT  
 NOTE: T4 DATA FOR DAY 90 AND 120 ONLY

----- DAY=120 GENDER=F -----

#### General Linear Models Procedure

Duncan's Multiple Range Test for variable: T4

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha= 0.05 df= 35 MSE= 0.110552

WARNING: Cell sizes are not equal.

Harmonic Mean of cell sizes= 9.72973

Number of Means	2	3	4
Critical Range	.3060	.3217	.3319

Means with the same letter are not significantly different.

Duncan Grouping		Mean	N	TRT
A	A	3.4890	10	1-CONTROL
B	A	3.3589	9	3----0.05
B	A	3.2590	10	5----1.00
B	B	3.0950	10	6---10.00

1 WPAFB 90-DAY PERCHLORATE - T4 DATA 08:42 Thursday, August 23, 2001 32  
 PROC GLM - STEPDOWN ANOVAS BY DAY AND GENDER - MAIN EFFECT OF TREATMENT  
 NOTE: T4 DATA FOR DAY 90 AND 120 ONLY

----- DAY=120 GENDER=M -----

#### General Linear Models Procedure

##### Class Level Information

Class	Levels	Values
TRT	4	1-CONTROL 3----0.05 5----1.00 6---10.00

Number of observations in by group = 40

1 WPAFB 90-DAY PERCHLORATE - T4 DATA 08:42 Thursday, August 23, 2001 33  
 PROC GLM - STEPDOWN ANOVAS BY DAY AND GENDER - MAIN EFFECT OF TREATMENT

NOTE: T4 DATA FOR DAY 90 AND 120 ONLY

----- DAY=120 GENDER=M -----

## General Linear Models Procedure

Dependent Variable: T4

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	3	11.84474750	3.94824917	28.68	0.0001
Error	36	4.95573000	0.13765917		
Corrected Total	39	16.80047750			
R-Square		C.V.	Root MSE	T4 Mean	
0.705024		9.042210	0.37102448	4.10325000	
Source	DF	Type I SS	Mean Square	F Value	Pr > F
TRT	3	11.84474750	3.94824917	28.68	0.0001
Source	DF	Type III SS	Mean Square	F Value	Pr > F
TRT	3	11.84474750	3.94824917	28.68	0.0001

1 WPAFB 90-DAY PERCHLORATE - T4 DATA 08:42 Thursday, August 23, 2001 34  
 PROC GLM - STEPDOWN ANOVAS BY DAY AND GENDER - MAIN EFFECT OF TREATMENT  
 NOTE: T4 DATA FOR DAY 90 AND 120 ONLY

----- DAY=120 GENDER=M -----

## General Linear Models Procedure

Duncan's Multiple Range Test for variable: T4

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha= 0.05 df= 36 MSE= 0.137659

Number of Means	2	3	4
Critical Range	.3365	.3538	.3650

Means with the same letter are not significantly different.

Duncan Grouping	Mean	N	TRT
A	4.9500	10	1-CONTROL
B	4.0430	10	3----0.05
B	3.9880	10	5----1.00
C	3.4320	10	6---10.00

1 WPAFB 90-DAY PERCHLORATE - T4 DATA 08:42 Thursday, August 23, 2001 35

PROC GLM - STEPDOWN ANOVAS BY DAY AND GENDER - MAIN EFFECT OF TREATMENT  
 NOTE: T4 DATA FOR DAY 90 AND 120 ONLY

----- DAY=90 GENDER=F -----

General Linear Models Procedure  
 Class Level Information

Class	Levels	Values
TRT	6	1-CONTROL 2----0.01 3----0.05 4----0.20 5---1.00 6---10.00

Number of observations in by group = 60

NOTE: Due to missing values, only 59 observations can be used in this analysis.

1 WPAFB 90-DAY PERCHLORATE - T4 DATA 08:42 Thursday, August 23, 2001 36  
 PROC GLM - STEPDOWN ANOVAS BY DAY AND GENDER - MAIN EFFECT OF TREATMENT  
 NOTE: T4 DATA FOR DAY 90 AND 120 ONLY

----- DAY=90 GENDER=F -----

General Linear Models Procedure

Dependent Variable: T4

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	5	12.58623271	2.51724654	20.92	0.0001
Error	53	6.37813000	0.12034208		
Corrected Total	58	18.96436271			

R-Square	C.V.	Root MSE	T4 Mean
0.663678	9.935587	0.34690355	3.49152542

Source	DF	Type I SS	Mean Square	F Value	Pr > F
TRT	5	12.58623271	2.51724654	20.92	0.0001
Source	DF	Type III SS	Mean Square	F Value	Pr > F
TRT	5	12.58623271	2.51724654	20.92	0.0001

1 WPAFB 90-DAY PERCHLORATE - T4 DATA 08:42 Thursday, August 23, 2001 37  
 PROC GLM - STEPDOWN ANOVAS BY DAY AND GENDER - MAIN EFFECT OF TREATMENT  
 NOTE: T4 DATA FOR DAY 90 AND 120 ONLY

----- DAY=90 GENDER=F -----

General Linear Models Procedure

Duncan's Multiple Range Test for variable: T4

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha= 0.05 df= 53 MSE= 0.120342  
 WARNING: Cell sizes are not equal.  
 Harmonic Mean of cell sizes= 9.818182

Number of Means 2 3 4 5 6  
 Critical Range .3140 .3303 .3410 .3488 .3548

Means with the same letter are not significantly different.

Duncan Grouping	Mean	N	TRT
A	4.4410	10	1-CONTROL
B	3.5210	10	2----0.01
B	3.3950	10	3----0.05
B	3.3870	10	4----0.20
C	3.1833	9	5----1.00
C	2.9910	10	6---10.00

1 WPAFB 90-DAY PERCHLORATE - T4 DATA 08:42 Thursday, August 23, 2001 38  
 PROC GLM - STEPDOWN ANOVAS BY DAY AND GENDER - MAIN EFFECT OF TREATMENT  
 NOTE: T4 DATA FOR DAY 90 AND 120 ONLY

----- DAY=90 GENDER=M -----

General Linear Models Procedure  
 Class Level Information

Class	Levels	Values
TRT	6	1-CONTROL 2----0.01 3----0.05 4----0.20 5----1.00 6---10.00

Number of observations in by group = 60

1 WPAFB 90-DAY PERCHLORATE - T4 DATA 08:42 Thursday, August 23, 2001 39  
 PROC GLM - STEPDOWN ANOVAS BY DAY AND GENDER - MAIN EFFECT OF TREATMENT  
 NOTE: T4 DATA FOR DAY 90 AND 120 ONLY

----- DAY=90 GENDER=M -----

General Linear Models Procedure

Dependent Variable: T4

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	5	29.64594833	5.92918967	36.10	0.0001
Error	54	8.86891000	0.16423907		
Corrected Total	59	38.51485833			
R-Square		C.V.	Root MSE	T4 Mean	
0.769728		10.62059	0.40526420	3.81583333	

Source	DF	Type I SS	Mean Square	F Value	Pr > F
TRT	5	29.64594833	5.92918967	36.10	0.0001
Source	DF	Type III SS	Mean Square	F Value	Pr > F
TRT	5	29.64594833	5.92918967	36.10	0.0001

1 WPAFB 90-DAY PERCHLORATE - T4 DATA 08:42 Thursday, August 23, 2001 40  
 PROC GLM - STEPDOWN ANOVAS BY DAY AND GENDER - MAIN EFFECT OF TREATMENT  
 NOTE: T4 DATA FOR DAY 90 AND 120 ONLY

----- DAY=90 GENDER=M -----

#### General Linear Models Procedure

##### Duncan's Multiple Range Test for variable: T4

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha= 0.05 df= 54 MSE= 0.164239

Number of Means	2	3	4	5	6
Critical Range	.3634	.3822	.3946	.4036	.4106

Means with the same letter are not significantly different.

Duncan Grouping	Mean	N	TRT
A	5.0600	10	1-CONTROL
B	4.3560	10	2----0.01
C	3.6320	10	3----0.05
C	3.4950	10	4----0.20
C	3.4670	10	5----1.00
D	2.8850	10	6---10.00

## APPENDIX 4

### Rat Subchronic Study - T3

Reference: Springborn Laboratories, Inc. (1998) A 90-day drinking water toxicity study in rats with ammonium perchlorate: amended final report [amended study completion date: June 3]. Spencerville, OH: Springborn Laboratories, Inc.; study no. 3455.1.

11

The SAS System

08:42 Thursday, August 23, 2001

NOTE: Copyright (c) 1989-1996 by SAS Institute Inc., Cary, NC, USA.  
 NOTE: SAS (r) Proprietary Software Release 6.12 TS020  
 Licensed to US ENVIRONMENTAL PROTECTION AGENCY, Site 0019614059.

NOTE: Running on ALPHASERVER Model 2100 5/300 Serial Number 80000000.

Welcome to the NHEERL-RTP SAS Information Delivery System.

```

1      *THIS FILE IS FOUND AT [CROFTON.THYROID]perchlorate SUBCHRONIC T3.SAS;
2      *IT ANALYZES THE T3 THYROID HORMONE DATA FROM THE WPAFB 90 DAY PERCHLORATE STUDY;
3
4      *INPUT DATA INTO SAS DATASET;
5      DATA RAW; INFILE '[CROFTON.THYROID.PERCHLORATE]PERCHLORATE_SUBCHRONIC_TH.TXT';
6          INPUT ANIM GENDER$ DAYS DOSE$ STUDYDAY T4 T3 TSH;
7
8      *DEFINITIONS OF VARIABLES;
9      *      ANIM = ANIMAL ID;
10     *      DAY = RANGE OF DAYS-ON-STUDY;
11     *      TRT = TREATMENT CODE;
12     *      STUDYDAY = DAY OF SAMPLING;
13     *      T4 = THYROXINE, ug/dl;
14     *      T3 = TRIIODOTHYRONINE, ng/ml;
15     *      TSH = THYROID STIMULATING HORMONE, ng/ml;
16
17     *ASSIGN TREATMENTS TO DOSAGE CODES IN MG/KG/DAY;
18     IF DOSE = '1' THEN TRT = '1-CONTROL';
19     IF DOSE = '2' THEN TRT = '2----0.01';
20     IF DOSE = '3' THEN TRT = '3----0.05';
21     IF DOSE = '4' THEN TRT = '4----0.20';
22     IF DOSE = '5' THEN TRT = '5----1.00';
23     IF DOSE = '6' THEN TRT = '6---10.00';
24
25     *REASSIGN DAY VARIABLE;
26     IF DAY = '15-18' THEN DAY = '15';
27     IF DAY = '92-95' THEN DAY = '90';
28     IF DAY = '97-123' THEN DAY = '120';
29
30     *PRINT THE RAW DATA FILE;

```

NOTE: The infile '[CROFTON.THYROID.PERCHLORATE]PERCHLORATE\_SUBCHRONIC\_TH.TXT' is:  
 File=DSA21:[SAS\$USERS.CROFTON.THYROID.PERCHLORATE]PERCHLORATE\_SUBCHRONIC\_TH.TXT

NOTE: 320 records were read from the infile '[CROFTON.THYROID.PERCHLORATE]PERCHLORATE\_SUBCHRONIC\_TH.TXT'.  
 The minimum record length was 58.

The maximum record length was 60.

NOTE: The data set WORK.RAW has 320 observations and 9 variables.

```

31         PROC PRINT;
32
33         *SORT DATA BY DAY, TRT AND GENDER -- THEN GET MEANS;
34
35

```

NOTE: The PROCEDURE PRINT printed pages 1-6.

```
35         PROC SORT; BY DAY TRT GENDER;
```

The SAS System

08:42 Thursday, August 23, 2001

36

NOTE: The data set WORK.RAW has 320 observations and 9 variables.

```
36      PROC MEANS N MEAN STDERR MIN MAX STD VAR CV;  
37          BY DAY TRT GENDER;  
38          VAR T3;  
39  
40
```

NOTE: The PROCEDURE MEANS printed pages 7-11.

```
40      PROC SORT; BY DAY TRT;  
41
```

NOTE: Input data set is already sorted, no sorting done.

```
41      PROC MEANS N MEAN STDERR MIN MAX STD VAR CV;  
42          BY DAY TRT;  
43          VAR T3;  
44  
45
```

NOTE: The PROCEDURE MEANS printed pages 12-14.

```
45      PROC SORT; BY GENDER TRT;  
46
```

NOTE: The data set WORK.RAW has 320 observations and 9 variables.

```
46      PROC MEANS N MEAN STDERR MIN MAX STD VAR CV;  
47          BY GENDER TRT;  
48          VAR T3;  
49  
50  
51      *RUN SEPARATE TWO WAY ANOVAS - GENDER*TRT FOR EACH DAY;  
52      * THIS WAS DONE BECAUSE DATA ON DAY 120 IS INCOMPLETE FOR THE DOSE RESPONSE;  
53      * THIS APPROACH WAS RECOMMENDED BY THE PEER REVIEW;  
54  
55
```

NOTE: The PROCEDURE MEANS printed pages 15-16.

```
55      PROC SORT;BY DAY GENDER TRT;  
56
```

NOTE: The data set WORK.RAW has 320 observations and 9 variables.

```
56      PROC GLM; BY DAY;  
57          CLASSES GENDER TRT;  
58          MODEL T3 = GENDER|TRT;  
59          TITLE1 "WPAFB 90-DAY PERCHLORATE - T3 DATA";  
60          TITLE2 "PROC GLMs BY DAY - GENDER BY TRT INTERACTIONS";  
61  
62  
63      *STEPDOWN ANOVA ANALYSES FOR T3 DATA - STEPDOWNS BY DAY;  
64  
65      *STEPDOWN ANOVAS FOR DAY 120;
```

The SAS System

08:42 Thursday, August 23, 2001

```
66      * THERE WAS NO GENDER X TRT INTERACTION SO TWO APPROACHES WERE TAKEN TO RUN;  
67      * THE MEAN CONTRASTS AS RECOMMENDED BY THE PEER REVIEW AND CONSULTATION WITH;  
68      * ALLAN MARCUS;  
69
```

```

70      * THE APPROACH RECOMMENDED BY THE PEER REVIEW WAS TO INCLUDE ANY SIGNIFICANT;
71      * MAIN EFFECTS IN THE STEPDOWN ANOVAS - THIS IS THE 'LIBERAL' APPROACH;
72      * THE APPROACH RECOMMENDED BY CONSULTATION WITH ALLAN MARCUS WAS TO CONTRAST;
73      * THE LIBERAL APPROACH WITH A MORE 'CONSERVATIVE' APPROACH IN WHICH ALL;
74      * MEAN CONTRASTS ARE DONE WITH THE FIT TO THE FULL MODEL WHICH WILL MAXIMIZE;
75      * THE LIKELIHOOD OF DETECTING A DIFFERENCE BETWEEN MEANS;
76

```

NOTE: The PROCEDURE GLM printed pages 17-22.

```

77      DATA RAW3; SET RAW;
78      IF DAY = '90' THEN DELETE;
79      IF DAY = '15' THEN DELETE;
80
81      *THIS IS THE 'CONSERVATIVE' APPROACH AND FITS THE FULL MODEL TO MINIMIZE;
82      * THE ERROR TERM. THIS WILL MAXIMIZE THE LIKELIHOOD OF DETECTING A;
83      * SIGNIFICANT DIFFERENCE BETWEEN TREATMENT GROUPS;
84
85

```

NOTE: The data set WORK.RAW3 has 80 observations and 9 variables.

```

85      PROC SORT; BY TRT GENDER;
86

```

NOTE: The data set WORK.RAW3 has 80 observations and 9 variables.

```

86      PROC GLM;
87      CLASSES TRT GENDER;
88      MODEL T3 = TRT|GENDER;
89      MEANS TRT/DUNCAN LINES;
90          TITLE1 " WPAFB 90-DAY PERCHLORATE - T3 DATA";
91          TITLE2 "PROC GLM - STEPDOWN ANOVAS - MAIN EFFECT OF TRT";
92          TITLE3 "NOTE: T3 DATA DAY 120 ONLY -- CONSERVATIVE APPROACH";
93
94      *LESS CONSERVATIVE STEPDOWN'S - ONLY INCLUDES MAIN EFFECTS WITH p less than 0.05;
95

```

NOTE: Means from the MEANS statement are not adjusted for other terms in the model. For adjusted means, use the LSMEANS statement.  
 NOTE: The PROCEDURE GLM printed pages 23-25.

```

95      PROC GLM;
96      CLASSES TRT GENDER;
97      MODEL T3 = TRT GENDER;
98      MEANS TRT/DUNCAN LINES;
99          TITLE1 " WPAFB 90-DAY PERCHLORATE - T3 DATA";
100         TITLE2 "PROC GLM - STEPDOWN ANOVAS - MAIN EFFECT OF TRT";
101         TITLE3 " NOTE: T3 DATA DAY 120 ONLY - LIBERAL APPROACH";
102
103
104      *STEPDOWN ANOVA ANALYSES FOR T3 DATA FOR DAYS 15 AND 90 - STEPDOWNS BY GENDER;
105      * THESE STEPDOWNS WERE CONDUCTED BY GENDER SINCE THERE WAS A HIGHLY;
106      * SIGNIFICANT INTERACTION BETWEEN GENDER AND TREATMENT ON THESE DAYS;
107

```

The SAS System

08:42 Thursday, August 23, 2001

NOTE: Means from the MEANS statement are not adjusted for other terms in the model. For adjusted means, use the LSMEANS statement.  
 NOTE: The PROCEDURE GLM printed pages 26-28.

```

108     DATA RAW4; SET RAW;
109     IF DAY = '120' THEN DELETE;
110

```

111

NOTE: The data set WORK.RAW4 has 240 observations and 9 variables.

```
111      PROC SORT; BY DAY GENDER;
112
```

NOTE: The data set WORK.RAW4 has 240 observations and 9 variables.

```
112      PROC GLM; BY DAY GENDER;
113      CLASSES TRT;
114      MODEL T3 = TRT;
115      MEANS TRT/DUNCAN LINES;
116      TITLE1 "      WPAFB 90-DAY PERCHLORATE ~ T3 DATA" ;
117      TITLE2 "PROC GLM - STEPDOWN ANOVAS BY DAY AND GENDER - MAIN EFFECT OF TREATMENT";
118      TITLE3 "      NOTE: T3 DATA FOR DAY 90 AND 120 ONLY      ";
119
120      ENDSAS;
```

NOTE: The PROCEDURE GLM printed pages 29-40.

NOTE: SAS Institute Inc., SAS Campus Drive, Cary, NC USA 27513-2414

1 The SAS System

08:42 Thursday, August 23, 2001 1

OBS	ANIM	GENDER	DAY	DOSE	STUDYDAY	T4	T3	TSH	TRT
1	11716	M	15	1	18	6.05	203.72	15.74	1-CONTROL
2	11717	M	15	1	15	6.39	226.49	13.32	1-CONTROL
3	11718	M	15	1	16	5.10	200.14	13.08	1-CONTROL
4	11719	M	120	1	121	3.70	205.66	19.56	1-CONTROL
5	11720	M	15	1	15	5.64	208.45	13.72	1-CONTROL
6	11721	M	90	1	92	4.61	204.69	15.71	1-CONTROL
7	11722	M	120	1	121	5.25	187.41	22.83	1-CONTROL
8	11723	M	120	1	121	4.89	198.23	23.47	1-CONTROL
9	11724	M	90	1	92	5.02	182.65	14.38	1-CONTROL
10	11725	M	15	1	17	6.64	186.23	14.20	1-CONTROL
11	11726	M	120	1	121	5.07	174.51	20.12	1-CONTROL
12	11727	M	120	1	122	5.22	238.28	22.54	1-CONTROL
13	11728	M	15	1	17	5.88	234.21	16.38	1-CONTROL
14	11729	M	90	1	92	4.96	158.23	15.18	1-CONTROL
15	11730	M	120	1	122	5.10	212.19	19.79	1-CONTROL
16	11731	M	15	1	16	4.84	205.08	13.21	1-CONTROL
17	11732	M	90	1	93	4.63	156.89	17.72	1-CONTROL
18	11733	M	120	1	122	5.11	188.45	19.11	1-CONTROL
19	11734	M	90	1	93	6.35	189.84	17.50	1-CONTROL
20	11735	M	90	1	94	5.19	179.28	15.39	1-CONTROL
21	11736	M	90	1	94	5.12	215.33	17.61	1-CONTROL
22	11737	M	120	1	123	5.02	190.22	19.99	1-CONTROL
23	11738	M	90	1	94	4.37	160.86	14.98	1-CONTROL
24	11739	M	15	1	15	5.42	178.53	15.52	1-CONTROL
25	11740	M	120	1	123	4.75	234.82	19.91	1-CONTROL
26	11741	M	90	1	95	4.97	171.09	14.79	1-CONTROL
27	11742	M	90	1	95	5.38	179.51	18.61	1-CONTROL
28	11743	M	120	1	123	5.39	204.43	21.96	1-CONTROL
29	11744	M	15	1	18	5.29	170.16	17.45	1-CONTROL
30	11745	M	15	1	17	5.19	187.11	15.30	1-CONTROL
31	11746	M	90	2	92	3.22	158.15	16.27	2----0.01
32	11747	M	15	2	18	5.10	173.23	15.22	2----0.01
33	11748	M	90	2	92	4.22	155.40	16.87	2----0.01
34	11749	M	90	2	92	4.70	136.19	15.95	2----0.01
35	11750	M	90	2	93	4.23	152.61	17.54	2----0.01
36	11751	M	15	2	.	.	.	.	2----0.01
37	11752	M	90	2	93	4.12	154.06	15.40	2----0.01

38	11753	M	90	2	94	4.76	144.06	15.46	2----0.01
39	11754	M	90	2	94	4.38	186.86	14.96	2----0.01
40	11755	M	90	2	94	4.49	149.51	20.14	2----0.01
41	11756	M	15	2	17	4.23	170.49	12.76	2----0.01
42	11757	M	15	2	17	5.21	154.81	17.63	2----0.01
43	11758	M	15	2	.	.	.	.	2----0.01
44	11759	M	15	2	.	.	.	.	2----0.01
45	11760	M	15	2	17	6.03	136.30	18.41	2----0.01
46	11761	M	90	2	95	4.65	151.61	19.51	2----0.01
47	11762	M	15	2	.	.	.	.	2----0.01
48	11763	M	15	2	.	.	.	.	2----0.01
49	11764	M	15	2	18	5.70	183.30	16.49	2----0.01
50	11765	M	90	2	95	4.79	186.19	16.31	2----0.01
51	11766	M	15	3	16	5.06	136.55	16.30	3----0.05
52	11767	M	120	3	121	4.12	204.77	17.66	3----0.05
53	11768	M	15	3	17	5.55	167.33	16.44	3----0.05
54	11769	M	90	3	92	3.16	119.70	15.67	3----0.05
55	11770	M	120	3	121	3.61	200.87	22.11	3----0.05
56	11771	M	15	3	18	5.27	150.95	19.63	3----0.05

1

The SAS System

08:42 Thursday, August 23, 2001 2

OBS	ANIM	GENDER	DAY	DOSE	STUDYDAY	T4	T3	TSH	TRT
57	11772	M	15	3	18	4.65	141.88	14.89	3----0.05
58	11773	M	120	3	121	3.91	202.65	19.85	3----0.05
59	11774	M	90	3	92	3.28	124.63	17.77	3----0.05
60	11775	M	120	3	121	4.55	218.02	21.22	3----0.05
61	11776	M	90	3	92	3.30	131.45	15.41	3----0.05
62	11777	M	90	3	93	3.96	134.26	17.50	3----0.05
63	11778	M	15	3	.	.	.	.	3----0.05
64	11779	M	15	3	15	5.50	119.88	17.61	3----0.05
65	11780	M	90	3	93	4.06	119.90	17.19	3----0.05
66	11781	M	120	3	122	3.89	215.05	21.18	3----0.05
67	11782	M	120	3	122	3.39	208.74	20.83	3----0.05
68	11783	M	120	3	122	4.64	218.37	20.47	3----0.05
69	11784	M	15	3	17	5.26	121.66	17.17	3----0.05
70	11785	M	120	3	123	4.15	265.28	23.61	3----0.05
71	11786	M	15	3	15	5.05	139.26	15.92	3----0.05
72	11787	M	90	3	94	3.89	112.96	18.14	3----0.05
73	11788	M	120	3	123	3.99	198.57	22.25	3----0.05
74	11789	M	15	3	15	5.58	136.44	15.96	3----0.05
75	11790	M	90	3	94	3.95	107.63	18.40	3----0.05
76	11791	M	90	3	94	3.21	119.83	20.45	3----0.05
77	11792	M	90	3	95	3.64	122.87	20.22	3----0.05
78	11793	M	15	3	17	5.00	128.41	17.63	3----0.05
79	11794	M	90	3	95	3.87	157.14	17.59	3----0.05
80	11795	M	120	3	123	4.18	209.55	24.12	3----0.05
81	11797	M	90	4	92	3.89	106.68	18.81	4----0.20
82	11798	M	15	4	16	5.21	157.43	17.67	4----0.20
83	11799	M	90	4	92	3.61	103.68	17.78	4----0.20
84	11800	M	90	4	92	2.92	130.58	18.73	4----0.20
85	11801	M	15	4	17	4.36	129.67	15.45	4----0.20
86	11802	M	15	4	18	5.57	137.40	18.91	4----0.20
87	11803	M	15	4	15	4.91	135.51	16.67	4----0.20
88	11804	M	15	4	17	5.59	144.84	18.93	4----0.20
89	11805	M	90	4	93	3.71	132.97	20.76	4----0.20
90	11806	M	90	4	93	4.05	134.56	18.61	4----0.20
91	11807	M	15	4	15	4.99	172.39	20.03	4----0.20
92	11808	M	15	4	17	5.32	120.11	19.50	4----0.20
93	11809	M	90	4	94	3.66	126.89	21.29	4----0.20
94	11810	M	15	4	15	5.58	125.26	17.75	4----0.20
95	11811	M	90	4	94	3.21	144.36	21.26	4----0.20
96	11812	M	90	4	94	3.04	121.08	16.24	4----0.20

97	11813	M	15	4	16	4.99	138.63	15.95	4----0.20
98	11814	M	90	4	95	3.40	117.95	19.24	4----0.20
99	11815	M	90	4	95	3.46	113.34	16.98	4----0.20
100	11816	M	15	5	15	5.58	122.39	19.93	5----1.00
101	11817	M	90	5	92	3.87	134.53	17.31	5----1.00
102	11818	M	15	5	18	4.84	130.71	20.27	5----1.00
103	11819	M	15	5	15	5.17	139.56	17.39	5----1.00
104	11820	M	15	5	17	4.69	137.44	17.03	5----1.00
105	11821	M	120	5	121	3.83	244.75	22.33	5----1.00
106	11822	M	90	5	92	3.14	133.28	17.50	5----1.00
107	11823	M	120	5	121	4.02	206.00	19.39	5----1.00
108	11824	M	90	5	92	3.84	115.98	20.27	5----1.00
109	11825	M	15	5	18	4.92	133.18	20.87	5----1.00
110	11826	M	120	5	121	3.81	206.00	22.63	5----1.00
111	11827	M	90	5	93	3.32	112.16	18.98	5----1.00
112	11828	M	120	5	121	4.16	223.91	23.48	5----1.00

1

The SAS System

08:42 Thursday, August 23, 2001 3

OBS	ANIM	GENDER	DAY	DOSE	STUDYDAY	T4	T3	TSH	TRT
113	11829	M	120	5	122	3.51	254.48	20.96	5----1.00
114	11830	M	90	5	93	3.59	103.33	21.52	5----1.00
115	11831	M	15	5	16	6.06	101.61	18.72	5----1.00
116	11832	M	90	5	94	2.79	112.78	20.06	5----1.00
117	11833	M	120	5	122	4.27	195.01	21.06	5----1.00
118	11834	M	120	5	122	3.92	202.03	24.20	5----1.00
119	11835	M	15	5	15	4.81	125.91	21.75	5----1.00
120	11836	M	15	5	17	4.86	109.93	16.11	5----1.00
121	11837	M	120	5	123	4.29	183.56	21.72	5----1.00
122	11838	M	120	5	123	3.68	194.21	23.70	5----1.00
123	11839	M	15	5	16	5.24	124.57	17.48	5----1.00
124	11840	M	90	5	94	3.20	138.69	17.42	5----1.00
125	11841	M	90	5	94	3.61	129.19	18.96	5----1.00
126	11842	M	90	5	95	3.82	114.27	18.97	5----1.00
127	11843	M	120	5	123	4.39	206.09	22.05	5----1.00
128	11844	M	15	5	17	5.74	112.27	18.45	5----1.00
129	11845	M	90	5	95	3.49	123.71	19.41	5----1.00
130	11846	M	15	6	17	3.99	105.59	25.16	6---10.00
131	11847	M	15	6	16	4.19	117.76	26.50	6---10.00
132	11848	M	15	6	15	4.69	122.59	22.67	6---10.00
133	11849	M	120	6	121	3.46	190.62	22.86	6---10.00
134	11850	M	120	6	121	3.18	185.98	21.11	6---10.00
135	11851	M	90	6	92	2.75	106.87	19.09	6---10.00
136	11852	M	90	6	92	2.57	116.65	20.13	6---10.00
137	11853	M	15	6	18	3.79	128.35	24.52	6---10.00
138	11854	M	90	6	92	2.97	112.98	18.47	6---10.00
139	11855	M	120	6	121	3.81	180.99	20.10	6---10.00
140	11856	M	120	6	122	2.76	219.28	21.07	6---10.00
141	11857	M	15	6	17	4.69	135.80	26.22	6---10.00
142	11858	M	15	6	17	3.99	146.43	27.80	6---10.00
143	11859	M	15	6	16	3.91	110.88	21.02	6---10.00
144	11860	M	90	6	93	2.67	119.68	22.82	6---10.00
145	11861	M	15	6	15	4.75	114.73	23.81	6---10.00
146	11862	M	90	6	93	3.10	104.26	20.88	6---10.00
147	11863	M	15	6	18	4.78	114.40	22.24	6---10.00
148	11864	M	120	6	122	3.79	195.49	28.12	6---10.00
149	11865	M	120	6	122	3.51	176.59	20.70	6---10.00
150	11866	M	90	6	94	3.09	147.54	17.05	6---10.00
151	11867	M	90	6	94	2.86	120.92	16.19	6---10.00
152	11868	M	120	6	122	3.35	194.26	24.69	6---10.00
153	11869	M	120	6	123	3.63	165.40	24.10	6---10.00
154	11870	M	15	6	15	4.33	132.63	20.43	6---10.00
155	11871	M	90	6	94	2.73	119.44	18.40	6---10.00

156	11872	M	90	6	95	2.58	113.67	19.99	6---10.00
157	11873	M	90	6	95	3.53	109.46	17.55	6---10.00
158	11874	M	120	6	123	3.54	174.10	23.61	6---10.00
159	11875	M	120	6	123	3.29	163.56	21.52	6---10.00
160	11876	F	90	1	92	3.73	208.41	17.32	1-CONTROL
161	11877	F	15	1	16	4.89	133.28	9.89	1-CONTROL
162	11878	F	15	1	15	4.23	146.98	9.49	1-CONTROL
163	11879	F	120	1	121	2.93	218.73	12.16	1-CONTROL
164	11880	F	120	1	121	3.25	247.56	12.15	1-CONTROL
165	11881	F	15	1	15	4.45	148.52	9.00	1-CONTROL
166	11882	F	15	1	16	4.33	113.01	10.51	1-CONTROL
167	11883	F	120	1	121	3.12	269.33	11.21	1-CONTROL
168	11884	F	15	1	17	4.87	141.79	10.86	1-CONTROL
1	The SAS System								08:42 Thursday, August 23, 2001 4
OBS	ANIM	GENDER	DAY	DOSE	STUDYDAY	T4	T3	TSH	TRT
169	11885	F	120	1	122	3.50	208.59	14.29	1-CONTROL
170	11886	F	90	1	92	4.39	176.30	17.27	1-CONTROL
171	11887	F	120	1	122	4.02	221.72	12.48	1-CONTROL
172	11888	F	120	1	122	3.53	221.68	14.27	1-CONTROL
173	11889	F	15	1	16	3.47	115.12	11.30	1-CONTROL
174	11890	F	90	1	93	4.11	156.30	16.97	1-CONTROL
175	11891	F	90	1	93	4.38	184.05	13.65	1-CONTROL
176	11892	F	90	1	93	4.70	162.70	16.06	1-CONTROL
177	11893	F	15	1	17	4.81	125.46	10.27	1-CONTROL
178	11894	F	15	1	18	4.36	155.28	11.15	1-CONTROL
179	11895	F	90	1	94	4.10	174.56	16.51	1-CONTROL
180	11896	F	90	1	94	5.28	178.38	17.15	1-CONTROL
181	11897	F	120	1	122	3.76	233.84	12.22	1-CONTROL
182	11898	F	120	1	123	3.70	204.67	12.56	1-CONTROL
183	11899	F	120	1	123	3.67	201.68	15.44	1-CONTROL
184	11900	F	15	1	18	4.75	117.27	10.57	1-CONTROL
185	11901	F	90	1	95	4.75	157.34	15.31	1-CONTROL
186	11902	F	90	1	95	4.25	154.03	19.14	1-CONTROL
187	11903	F	15	1	18	4.72	133.24	11.36	1-CONTROL
188	11904	F	90	1	95	4.72	148.72	15.41	1-CONTROL
189	11905	F	120	1	123	3.41	209.42	13.98	1-CONTROL
190	11906	F	15	2	18	4.48	144.32	11.86	2----0.01
191	11907	F	90	2	92	3.61	161.10	17.85	2----0.01
192	11908	F	15	2	15	4.39	134.14	11.83	2----0.01
193	11909	F	15	2	15	4.59	134.16	10.33	2----0.01
194	11910	F	90	2	92	3.73	133.70	15.76	2----0.01
195	11911	F	15	2	16	4.58	134.89	10.03	2----0.01
196	11912	F	15	2	16	4.74	142.55	13.47	2----0.01
197	11913	F	15	2	16	4.60	113.00	10.78	2----0.01
198	11914	F	90	2	93	3.60	153.42	17.47	2----0.01
199	11915	F	90	2	93	3.36	140.29	14.80	2----0.01
200	11916	F	90	2	93	3.18	122.90	19.76	2----0.01
201	11917	F	15	2	18	3.24	147.24	13.71	2----0.01
202	11918	F	90	2	94	3.30	126.23	19.48	2----0.01
203	11919	F	90	2	94	3.10	136.10	15.89	2----0.01
204	11920	F	90	2	95	3.46	158.85	16.64	2----0.01
205	11921	F	15	2	17	4.44	128.84	11.46	2----0.01
206	11922	F	90	2	95	4.29	134.94	14.45	2----0.01
207	11923	F	15	2	18	3.83	145.91	11.36	2----0.01
208	11924	F	90	2	95	3.58	163.78	15.73	2----0.01
209	11925	F	15	2	17	4.34	115.29	12.35	2----0.01
210	11926	F	120	3	121	3.67	211.08	14.44	3----0.05
211	11927	F	90	3	92	4.15	158.08	15.59	3----0.05
212	11928	F	120	3	121	3.04	204.05	17.93	3----0.05
213	11929	F	90	3	92	3.80	126.88	18.02	3----0.05
214	11930	F	15	3	15	4.20	125.94	11.10	3----0.05

215	11931	F	15	3	15	4.37	145.96	11.46	3----0.05
216	11932	F	120	3	121	3.15	221.45	13.94	3----0.05
217	11933	F	120	3	122	3.84	218.24	15.58	3----0.05
218	11934	F	15	3	16	4.80	132.98	12.22	3----0.05
219	11935	F	90	3	93	3.41	156.25	17.08	3----0.05
220	11936	F	90	3	93	3.11	147.68	15.48	3----0.05
221	11937	F	90	3	93	3.28	110.79	16.63	3----0.05
222	11938	F	90	3	94	3.12	139.42	19.78	3----0.05
223	11939	F	90	3	94	3.25	135.47	15.18	3----0.05
224	11940	F	120	3	122	3.03	258.55	16.66	3----0.05

1

The SAS System

08:42 Thursday, August 23, 2001 5

OBS	ANIM	GENDER	DAY	DOSE	STUDYDAY	T4	T3	TSW	TRT
225	11941	F	15	3	17	4.86	111.65	13.98	3----0.05
226	11942	F	15	3	17	4.03	130.30	11.33	3----0.05
227	11943	F	120	3	122	3.88	214.89	13.95	3----0.05
228	11944	F	120	3	122	3.45	207.28	15.61	3----0.05
229	11945	F	15	3	16	4.40	131.63	13.56	3----0.05
230	11946	F	15	3	18	3.95	147.82	12.23	3----0.05
231	11947	F	120	3	123	3.23	203.40	14.29	3----0.05
232	11948	F	120	3	97	.	.	.	3----0.05
233	11949	F	120	3	123	2.94	205.03	18.39	3----0.05
234	11950	F	90	3	95	3.70	162.59	19.24	3----0.05
235	11951	F	15	3	18	4.27	144.64	13.57	3----0.05
236	11952	F	15	3	18	3.51	142.07	11.93	3----0.05
237	11953	F	15	3	16	4.16	114.53	12.01	3----0.05
238	11954	F	90	3	95	3.10	147.70	16.32	3----0.05
239	11955	F	90	3	95	3.03	144.15	15.13	3----0.05
240	11956	F	90	4	92	4.19	127.84	15.39	4----0.20
241	11957	F	90	4	92	3.40	113.07	17.08	4----0.20
242	11958	F	90	4	93	3.25	123.47	17.42	4----0.20
243	11959	F	15	4	16	4.25	128.36	10.56	4----0.20
244	11960	F	15	4	17	5.02	112.29	13.46	4----0.20
245	11961	F	90	4	93	3.19	151.66	17.53	4----0.20
246	11962	F	15	4	17	4.41	109.23	14.15	4----0.20
247	11963	F	15	4	15	4.20	140.54	10.88	4----0.20
248	11964	F	15	4	16	3.32	119.77	14.12	4----0.20
249	11965	F	90	4	93	3.35	149.43	16.31	4----0.20
250	11966	F	90	4	94	3.19	120.01	15.26	4----0.20
251	11967	F	15	4	18	4.56	137.82	11.46	4----0.20
252	11968	F	15	4	16	4.11	133.36	12.00	4----0.20
253	11969	F	90	4	94	3.32	154.35	19.95	4----0.20
254	11970	F	15	4	18	3.72	134.40	12.23	4----0.20
255	11971	F	15	4	15	4.04	134.22	12.46	4----0.20
256	11972	F	90	4	95	3.70	147.47	19.64	4----0.20
257	11973	F	90	4	95	3.18	140.71	17.38	4----0.20
258	11974	F	15	4	.	.	.	.	4----0.20
259	11975	F	90	4	95	3.10	137.11	17.83	4----0.20
260	11976	M	15	4	18	5.05	150.73	18.80	4----0.20
261	11976	F	90	5	92	3.02	122.86	17.75	5----1.00
262	11977	F	15	5	16	4.02	139.95	13.07	5----1.00
263	11978	F	120	5	121	3.34	205.43	16.46	5----1.00
264	11979	F	120	5	121	3.83	229.47	15.81	5----1.00
265	11980	F	120	5	121	2.77	219.83	15.98	5----1.00
266	11981	F	120	5	122	3.14	228.10	16.03	5----1.00
267	11982	F	15	5	18	3.45	122.78	12.33	5----1.00
268	11983	F	90	5	92	3.10	116.09	18.81	5----1.00
269	11984	F	15	5	17	4.30	109.93	10.13	5----1.00
270	11985	F	120	5	122	3.51	232.28	16.24	5----1.00
271	11986	F	120	5	122	2.97	193.81	17.84	5----1.00
272	11987	F	120	5	122	2.97	202.03	12.35	5----1.00
273	11988	F	90	5	93	3.41	116.59	16.26	5----1.00

274	11989	F	15	5	16	4.46	121.80	12.02	5----1.00
275	11990	F	90	5	93	2.90	107.73	19.20	5----1.00
276	11991	F	15	5	18	3.67	117.29	13.48	5----1.00
277	11992	F	15	5	18	3.81	127.88	11.70	5----1.00
278	11993	F	90	5	93	3.78	135.30	18.76	5----1.00
279	11994	F	15	5	16	4.60	138.22	12.48	5----1.00
280	11995	F	90	5	.	.	.	.	5----1.00

1 The SAS System 08:42 Thursday, August 23, 2001 6

OBS	ANIM	GENDER	DAY	DOSE	STUDYDAY	T4	T3	TSH	TRT
281	11996	F	90	5	94	3.43	117.29	15.69	5----1.00
282	11997	F	90	5	95	3.18	137.19	18.27	5----1.00
283	11998	F	90	5	95	2.79	124.03	14.97	5----1.00
284	11999	F	120	5	123	3.34	180.62	14.78	5----1.00
285	12000	F	90	5	95	3.04	125.61	18.93	5----1.00
286	12001	F	15	5	15	4.61	108.50	13.14	5----1.00
287	12002	F	120	5	123	3.31	246.40	16.60	5----1.00
288	12003	F	15	5	17	4.05	135.76	14.91	5----1.00
289	12004	F	120	5	123	3.41	208.65	15.44	5----1.00
290	12005	F	15	5	15	4.07	129.06	12.63	5----1.00
291	12006	F	90	6	92	2.92	126.60	20.28	6---10.00
292	12007	F	90	6	92	2.50	111.83	19.83	6---10.00
293	12008	F	120	6	121	3.31	195.96	17.08	6---10.00
294	12009	F	120	6	121	2.87	215.38	17.25	6---10.00
295	12010	F	15	6	15	4.07	137.80	15.15	6---10.00
296	12011	F	90	6	93	3.22	137.55	20.37	6---10.00
297	12012	F	90	6	93	2.92	129.39	18.10	6---10.00
298	12013	F	15	6	17	3.59	131.10	17.43	6---10.00
299	12014	F	120	6	121	3.81	172.26	16.07	6---10.00
300	12015	F	120	6	122	2.71	167.80	15.84	6---10.00
301	12016	F	15	6	16	3.79	117.79	16.54	6---10.00
302	12017	F	120	6	122	2.93	180.85	17.41	6---10.00
303	12018	F	90	6	93	2.95	136.33	20.36	6---10.00
304	12019	F	90	6	94	3.49	105.91	18.91	6---10.00
305	12020	F	120	6	122	2.83	214.31	18.24	6---10.00
306	12021	F	15	6	15	4.16	122.40	14.00	6---10.00
307	12022	F	90	6	94	3.11	124.02	21.38	6---10.00
308	12023	F	15	6	16	3.54	137.35	15.40	6---10.00
309	12024	F	120	6	123	3.40	182.94	14.44	6---10.00
310	12025	F	90	6	95	3.03	100.54	16.93	6---10.00
311	12026	F	15	6	18	3.09	109.03	19.37	6---10.00
312	12027	F	120	6	123	2.96	197.80	15.30	6---10.00
313	12028	F	15	6	16	3.42	126.12	14.76	6---10.00
314	12029	F	90	6	95	3.08	121.42	21.55	6---10.00
315	12030	F	15	6	17	3.40	112.99	17.88	6---10.00
316	12031	F	15	6	18	3.98	119.65	17.14	6---10.00
317	12032	F	15	6	18	3.35	130.08	17.94	6---10.00
318	12033	F	90	6	95	2.69	124.70	22.59	6---10.00
319	12034	F	120	6	123	3.23	213.65	14.55	6---10.00
320	12035	F	120	6	123	2.90	230.29	14.03	6---10.00

1 The SAS System 08:42 Thursday, August 23, 2001 7

Analysis Variable : T3

----- DAY=120 TRT=1-CONTROL GENDER=F -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
10	223.7220000	6.7215778	201.6800000	269.3300000	21.2554954	451.7960844	9.5008517

----- DAY=120 TRT=1-CONTROL GENDER=M -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
10	203.4200000	6.4991584	174.5100000	238.2800000	20.5521434	422.3906000	10.1033052

----- DAY=120 TRT=3----0.05 GENDER=F -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
9	215.9966667	5.7356134	203.4000000	258.5500000	17.2068402	296.0753500	7.9662527

----- DAY=120 TRT=3----0.05 GENDER=M -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
10	214.1870000	6.0897143	198.5700000	265.2800000	19.2573675	370.8462011	8.9909133

----- DAY=120 TRT=5----1.00 GENDER=F -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
10	214.6620000	6.3411045	180.6200000	246.4000000	20.0523331	402.0960622	9.3413520

----- DAY=120 TRT=5----1.00 GENDER=M -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
10	211.6040000	7.1784397	183.5600000	254.4800000	22.7002194	515.2999600	10.7276892

----- DAY=120 TRT=6---10.00 GENDER=F -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
10	197.1240000	6.6229304	167.8000000	230.2900000	20.9435449	438.6320711	10.6245535

1 The SAS System 08:42 Thursday, August 23, 2001 8

Analysis Variable : T3

----- DAY=120 TRT=6---10.00 GENDER=M -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
10	184.6270000	5.2191010	163.5600000	219.2800000	16.5042466	272.3901567	8.9392378

----- DAY=15 TRT=1-CONTROL GENDER=F -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
10	132.9950000	4.7535812	113.0100000	155.2800000	15.0321435	225.9653389	11.3027885

-- DAY=15 TRT=1-CONTROL GENDER=M --

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
10	200.0120000	6.4033508	170.1600000	234.2100000	20.2491733	410.0290178	10.1239792

-- DAY=15 TRT=2----0.01 GENDER=F --

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
10	134.0340000	3.8228350	113.0000000	147.2400000	12.0888656	146.1406711	9.0192530

-- DAY=15 TRT=2----0.01 GENDER=M --

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
5	163.6260000	8.2184236	136.3000000	183.3000000	18.3769538	337.7124300	11.2310719

-- DAY=15 TRT=3----0.05 GENDER=F --

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
10	132.7520000	4.0286581	111.6500000	147.8200000	12.7397356	162.3008622	9.5966430

-- DAY=15 TRT=3----0.05 GENDER=M --

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
9	138.0400000	4.9108910	119.8800000	167.3300000	14.7326729	217.0516500	10.6727564

1 The SAS System 08:42 Thursday, August 23, 2001 9

Analysis Variable : T3

-- DAY=15 TRT=4----0.20 GENDER=F --

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
9	127.7766667	3.7796836	109.2300000	140.5400000	11.3390509	128.5740750	8.8741170

-- DAY=15 TRT=4----0.20 GENDER=M --

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
---	------	-----------	---------	---------	---------	----------	----

10	141.1970000	4.9727401	120.1100000	172.3900000	15.7251851	247.2814456	11.1370532
----	-------------	-----------	-------------	-------------	------------	-------------	------------

----- DAY=15 TRT=5----1.00 GENDER=F -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
10	125.1170000	3.5160853	108.5000000	139.9500000	11.1188379	123.6285567	8.8867523

----- DAY=15 TRT=5----1.00 GENDER=M -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
10	123.7570000	3.9368462	101.6100000	139.5600000	12.4494007	154.9875789	10.0595528

----- DAY=15 TRT=6---10.00 GENDER=F -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
10	124.4310000	3.0984643	109.0300000	137.8000000	9.7982044	96.0048100	7.8744078

----- DAY=15 TRT=6---10.00 GENDER=M -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
10	122.9160000	4.0195009	105.5900000	146.4300000	12.7107778	161.5638711	10.3410278

----- DAY=90 TRT=1-CONTROL GENDER=F -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
10	170.0790000	5.6886936	148.7200000	208.4100000	17.9892285	323.6123433	10.5769840

1 The SAS System 08:42 Thursday, August 23, 2001 10

Analysis Variable : T3

----- DAY=90 TRT=1-CONTROL GENDER=M -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
10	179.8370000	6.1606986	156.8900000	215.3300000	19.4818394	379.5420678	10.8330541

----- DAY=90 TRT=2----0.01 GENDER=F -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
10	143.1310000	4.7266341	122.9000000	163.7800000	14.9469294	223.4106989	10.4428317

----- DAY=90 TRT=2----0.01 GENDER=M -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
10	157.4640000	5.2270374	136.1900000	186.8600000	16.5293437	273.2192044	10.4972208

----- DAY=90 TRT=3----0.05 GENDER=F -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
10	142.9010000	4.9427946	110.7900000	162.5900000	15.6304890	244.3121878	10.9379844

----- DAY=90 TRT=3----0.05 GENDER=M -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
10	125.0370000	4.3365337	107.6300000	157.1400000	13.7133237	188.0552456	10.9674126

----- DAY=90 TRT=4----0.20 GENDER=F -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
10	136.5120000	4.6184776	113.0700000	154.3500000	14.6049085	213.3033511	10.6986261

----- DAY=90 TRT=4----0.20 GENDER=M -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
10	123.2090000	4.1143990	103.6800000	144.3600000	13.0108719	169.2827878	10.5600012

1 The SAS System 08:42 Thursday, August 23, 2001 11

Analysis Variable : T3

----- DAY=90 TRT=5----1.00 GENDER=F -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
9	122.5211111	3.1470619	107.7300000	137.1900000	9.4411856	89.1359861	7.7057623

----- DAY=90 TRT=5----1.00 GENDER=M -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
10	121.7920000	3.7168971	103.3300000	138.6900000	11.7538606	138.1532400	9.6507658

----- DAY=90 TRT=6---10.00 GENDER=F -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
10	121.8290000	3.8832782	100.5400000	137.5500000	12.2800040	150.7984989	10.0797052

----- DAY=90 TRT=6---10.00 GENDER=M -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
10	117.1470000	3.8153576	104.2600000	147.5400000	12.0652200	145.5695344	10.2992138

1 The SAS System 08:42 Thursday, August 23, 2001 12

Analysis Variable : T3

----- DAY=120 TRT=1-CONTROL -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
20	213.5710000	5.1115288	174.5100000	269.3300000	22.8594518	522.5545358	10.7034437

----- DAY=120 TRT=3---0.05 -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
19	215.0442105	4.0902577	198.5700000	265.2800000	17.8290201	317.8739591	8.2908627

----- DAY=120 TRT=5---1.00 -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
20	213.1330000	4.6744887	180.6200000	254.4800000	20.9049491	437.0168958	9.8084056

----- DAY=120 TRT=6---10.00 -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
20	190.8755000	4.3468304	163.5600000	230.2900000	19.4396165	377.8986892	10.1844482

----- DAY=15 TRT=1-CONTROL -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
20	166.5035000	8.6115499	113.0100000	234.2100000	38.5120218	1483.18	23.1298572

----- DAY=15 TRT=2---0.01 -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
15	143.8980000	5.1570897	113.0000000	183.3000000	19.9733226	398.9336171	13.8801947

----- DAY=15 TRT=3 ---- 0.05 -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
19	135.2568421	3.1201932	111.6500000	167.3300000	13.6006066	184.9765006	10.0553927

1 The SAS System 08:42 Thursday, August 23, 2001 13

Analysis Variable : T3

----- DAY=15 TRT=4 ---- 0.20 -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
19	134.8400000	3.4654756	109.2300000	172.3900000	15.1056579	228.1809000	11.2026534

----- DAY=15 TRT=5 ---- 1.00 -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
20	124.4370000	2.5735462	101.6100000	139.9500000	11.5092485	132.4628011	9.2490566

----- DAY=15 TRT=6 ---- 10.00 -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
20	123.6735000	2.4759869	105.5900000	146.4300000	11.0729501	122.6102239	8.9533733

----- DAY=90 TRT=1 -CONTROL -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
20	174.9580000	4.2316112	148.7200000	215.3300000	18.9243404	358.1306589	10.8165048

----- DAY=90 TRT=2 ---- 0.01 -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
20	150.2975000	3.8033377	122.9000000	186.8600000	17.0090434	289.3075566	11.3169170

----- DAY=90 TRT=3 ---- 0.05 -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
20	133.9690000	3.7999028	107.6300000	162.5900000	16.9936821	288.7852305	12.6847868

----- DAY=90 TRT=4 ---- 0.20 -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
20	129.8605000	3.3748779	103.6800000	154.3500000	15.0929128	227.7960155	11.6224046

The SAS System 08:42 Thursday, August 23, 2001 14

Analysis Variable : T3

----- DAY=90 TRT=5----1.00 -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
19	122.1373684	2.3933296	103.3300000	138.6900000	10.4322821	108.8325094	8.5414335

----- DAY=90 TRT=6---10.00 -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
20	119.4880000	2.7032719	100.5400000	147.5400000	12.0893993	146.1535747	10.1176681

The SAS System 08:42 Thursday, August 23, 2001 15

Analysis Variable : T3

----- GENDER=F TRT=1-CONTROL -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
30	175.5986667	7.6283129	113.0100000	269.3300000	41.7819906	1745.73	23.7940250

----- GENDER=F TRT=2---0.01 -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
20	138.5825000	3.1371037	113.0000000	163.7800000	14.0295541	196.8283882	10.1236116

----- GENDER=F TRT=3----0.05 -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
29	162.0862069	7.4004758	110.7900000	258.5500000	39.8527817	1588.24	24.5873986

----- GENDER=F TRT=4----0.20 -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
19	132.3742105	3.1108998	109.2300000	154.3500000	13.5600976	183.8762480	10.2437609

----- GENDER=F TRT=5 ---- 1.00 -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
29	155.1889655	8.5574671	107.7300000	246.4000000	46.0833706	2123.68	29.6950047

----- GENDER=F TRT=6 ---- 10.00 -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
30	147.7946667	7.0060333	100.5400000	230.2900000	38.3736248	1472.54	25.9641472

----- GENDER=M TRT=1 - CONTROL -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
30	194.4230000	4.0339078	156.8900000	238.2800000	22.0946229	488.1723597	11.3642022

1. The SAS System 08:42 Thursday, August 23, 2001 16

Analysis Variable : T3

----- GENDER=M TRT=2 ---- 0.01 -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
15	159.5180000	4.3295167	136.1900000	186.8600000	16.7681459	281.1707171	10.5117579

----- GENDER=M TRT=3 ---- 0.05 -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
29	159.8137931	8.0555429	107.6300000	265.2800000	43.3804262	1881.86	27.1443568

----- GENDER=M TRT=4 ---- 0.20 -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
20	132.2030000	3.7581206	103.6800000	172.3900000	16.8068263	282.4694116	12.7128933

----- GENDER=M TRT=5 ---- 1.00 -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
30	152.3843333	8.2976113	101.6100000	254.4800000	45.4478887	2065.51	29.8245152

----- GENDER=M TRT=6 ---- 10.00 -----

	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
1	30	141.5633333	6.1773883	104.2600000	219.2800000	33.8349491	1144.80	23.9009271

WPAFB 90-DAY PERCHLORATE - T3 DATA  
PROC GLMS BY DAY - GENDER BY TRT INTERACTIONS

08:42 Thursday, August 23, 2001 17

---

----- DAY=120 -----

General Linear Models Procedure  
Class Level Information

Class	Levels	Values
GENDER	2	F M
TRT	4	1-CONTROL 3---0.05 5---1.00 6---10.00

Number of observations in by group = 80

NOTE: Due to missing values, only 79 observations can be used in this analysis.

1

	WPAFB 90-DAY PERCHLORATE - T3 DATA PROC GLMS BY DAY - GENDER BY TRT INTERACTIONS		08:42 Thursday, August 23, 2001 18
----- DAY=120 -----			

General Linear Models Procedure

Dependent Variable: T3

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	7	10859.06905342	1551.29557906	3.90	0.0012
Error	71	28229.66302000	397.60088761		
Corrected Total	78	39088.73207342			

R-Square	C.V.	Root MSE	T3 Mean
0.277806	9.583339	19.93993199	208.06873418

Source	DF	Type I SS	Mean Square	F Value	Pr > F
GENDER	1	1721.39296034	1721.39296034	4.33	0.0411
TRT	3	8021.71701614	2673.90567205	6.73	0.0005
GENDER*TRT	3	1115.95907693	371.98635898	0.94	0.4281

Source	DF	Type III SS	Mean Square	F Value	Pr > F
GENDER	1	1749.17808219	1749.17808219	4.40	0.0395
TRT	3	7965.13526893	2655.04508964	6.68	0.0005
GENDER*TRT	3	1115.95907693	371.98635898	0.94	0.4281

1

	WPAFB 90-DAY PERCHLORATE - T3 DATA PROC GLMS BY DAY - GENDER BY TRT INTERACTIONS		08:42 Thursday, August 23, 2001 19
--	---	--	------------------------------------

----- DAY=15 -----

General Linear Models Procedure  
Class Level Information

Class	Levels	Values
GENDER	2	F M
TRT	6	1-CONTROL 2---0.01 3---0.05 4---0.20 5---1.00 6---10.00

Number of observations in by group = 120

NOTE: Due to missing values, only 113 observations can be used in this analysis.

1 WPAFB 90-DAY PERCHLORATE - T3 DATA 08:42 Thursday, August 23, 2001 20  
PROC GLMs BY DAY - GENDER BY TRT INTERACTIONS

----- DAY=15 -----

General Linear Models Procedure

Dependent Variable: T3

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	11	51268.06250292	4660.73295481	23.94	0.0001
Error	101	19666.97489000	194.72252366		
Corrected Total	112	70935.03739292			
R-Square		C.V.	Root MSE		T3 Mean
0.722747		10.11922	13.95430126		137.89902655

Source	DF	Type I SS	Mean Square	F Value	Pr > F
GENDER	1	8612.08066238	8612.08066238	44.23	0.0001
TRT	5	25553.70598461	5110.74119692	26.25	0.0001
GENDER*TRT	5	17102.27585593	3420.45517119	17.57	0.0001
Source	DF	Type III SS	Mean Square	F Value	Pr > F
GENDER	1	9562.14327134	9562.14327134	49.11	0.0001
TRT	5	25944.29890257	5188.85978051	26.65	0.0001
GENDER*TRT	5	17102.27585593	3420.45517119	17.57	0.0001

1 WPAFB 90-DAY PERCHLORATE - T3 DATA 08:42 Thursday, August 23, 2001 21  
PROC GLMs BY DAY - GENDER BY TRT INTERACTIONS

----- DAY=90 -----

General Linear Models Procedure  
Class Level Information

Class	Levels	Values
-------	--------	--------

GENDER	2	F M
TRT	6	1-CONTROL 2----0.01 3----0.05 4----0.20 5----1.00 6---10.00

Number of observations in by group = 120

NOTE: Due to missing values, only 119 observations can be used in this analysis.

1 WPAFB 90-DAY PERCHLORATE - T3 DATA 08:42 Thursday, August 23, 2001 22  
PROC GLMs BY DAY - GENDER BY TRT INTERACTIONS

----- DAY=90 -----

#### General Linear Models Procedure

Dependent Variable: T3

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	11	47681.76890641	4334.70626422	20.38	0.0001
Error	107	22756.42032889	212.67682550		
Corrected Total	118	70438.18923529			

R-Square	C.V.	Root MSE	T3 Mean
0.676931	10.52281	14.58344354	138.58882353

Source	DF	Type I SS	Mean Square	F Value	Pr > F
GENDER	1	166.93407383	166.93407383	0.78	0.3776
TRT	5	43549.26769819	8709.85353964	40.95	0.0001
GENDER*TRT	5	3965.56713439	793.11342688	3.73	0.0038

Source	DF	Type III SS	Mean Square	F Value	Pr > F
GENDER	1	128.74784359	128.74784359	0.61	0.4383
TRT	5	43559.70417704	8711.94083541	40.96	0.0001
GENDER*TRT	5	3965.56713439	793.11342688	3.73	0.0038

1 WPAFB 90-DAY PERCHLORATE - T3 DATA 08:42 Thursday, August 23, 2001 23  
PROC GLM - STEPDOWN ANOVAS - MAIN EFFECT OF TRT  
NOTE: T3 DATA DAY 120 ONLY -- CONSERVATIVE APPROACH

#### General Linear Models Procedure Class Level Information

Class	Levels	Values
TRT	4	1-CONTROL 3----0.05 5----1.00 6---10.00
GENDER	2	F M

Number of observations in data set = 80

NOTE: Due to missing values, only 79 observations can be used in this analysis.

1	WPAFB 90-DAY PERCHLORATE - T3 DATA PROC GLM - STEPDOWN ANOVAS - MAIN EFFECT OF TRT NOTE: T3 DATA DAY 120 ONLY -- CONSERVATIVE APPROACH			08:42 Thursday, August 23, 2001 24																																																																																										
General Linear Models Procedure																																																																																														
Dependent Variable: T3																																																																																														
<table border="1"> <thead> <tr> <th>Source</th><th>DF</th><th>Sum of Squares</th><th>Mean Square</th><th>F Value</th><th>Pr &gt; F</th></tr> </thead> <tbody> <tr> <td>Model</td><td>7</td><td>10859.06905342</td><td>1551.29557906</td><td>3.90</td><td>0.0012</td></tr> <tr> <td>Error</td><td>71</td><td>28229.66302000</td><td>397.60088761</td><td></td><td></td></tr> <tr> <td>Corrected Total</td><td>78</td><td>39088.73207342</td><td></td><td></td><td></td></tr> <tr> <td colspan="2" style="text-align: right;">R-Square</td><td>C.V.</td><td>Root MSE</td><td colspan="2" style="text-align: right;">T3 Mean</td></tr> <tr> <td colspan="2" style="text-align: right;">0.277806</td><td>9.583339</td><td>19.93993199</td><td colspan="2" style="text-align: right;">208.06873418</td></tr> <tr> <td colspan="5"> <table border="1"> <thead> <tr> <th>Source</th><th>DF</th><th>Type I SS</th><th>Mean Square</th><th>F Value</th><th>Pr &gt; F</th></tr> </thead> <tbody> <tr> <td>TRT</td><td>3</td><td>7955.06851526</td><td>2651.68950509</td><td>6.67</td><td>0.0005</td></tr> <tr> <td>GENDER</td><td>1</td><td>1788.04146122</td><td>1788.04146122</td><td>4.50</td><td>0.0374</td></tr> <tr> <td>TRT*GENDER</td><td>3</td><td>1115.95907693</td><td>371.98635898</td><td>0.94</td><td>0.4281</td></tr> </tbody> </table> </td></tr> <tr> <td colspan="5"> <table border="1"> <thead> <tr> <th>Source</th><th>DF</th><th>Type III SS</th><th>Mean Square</th><th>F Value</th><th>Pr &gt; F</th></tr> </thead> <tbody> <tr> <td>TRT</td><td>3</td><td>7965.13526893</td><td>2655.04508964</td><td>6.68</td><td>0.0005</td></tr> <tr> <td>GENDER</td><td>1</td><td>1749.17808219</td><td>1749.17808219</td><td>4.40</td><td>0.0395</td></tr> <tr> <td>TRT*GENDER</td><td>3</td><td>1115.95907693</td><td>371.98635898</td><td>0.94</td><td>0.4281</td></tr> </tbody> </table> </td></tr> </tbody> </table>	Source	DF	Sum of Squares	Mean Square	F Value	Pr > F	Model	7	10859.06905342	1551.29557906	3.90	0.0012	Error	71	28229.66302000	397.60088761			Corrected Total	78	39088.73207342				R-Square		C.V.	Root MSE	T3 Mean		0.277806		9.583339	19.93993199	208.06873418		<table border="1"> <thead> <tr> <th>Source</th><th>DF</th><th>Type I SS</th><th>Mean Square</th><th>F Value</th><th>Pr &gt; F</th></tr> </thead> <tbody> <tr> <td>TRT</td><td>3</td><td>7955.06851526</td><td>2651.68950509</td><td>6.67</td><td>0.0005</td></tr> <tr> <td>GENDER</td><td>1</td><td>1788.04146122</td><td>1788.04146122</td><td>4.50</td><td>0.0374</td></tr> <tr> <td>TRT*GENDER</td><td>3</td><td>1115.95907693</td><td>371.98635898</td><td>0.94</td><td>0.4281</td></tr> </tbody> </table>					Source	DF	Type I SS	Mean Square	F Value	Pr > F	TRT	3	7955.06851526	2651.68950509	6.67	0.0005	GENDER	1	1788.04146122	1788.04146122	4.50	0.0374	TRT*GENDER	3	1115.95907693	371.98635898	0.94	0.4281	<table border="1"> <thead> <tr> <th>Source</th><th>DF</th><th>Type III SS</th><th>Mean Square</th><th>F Value</th><th>Pr &gt; F</th></tr> </thead> <tbody> <tr> <td>TRT</td><td>3</td><td>7965.13526893</td><td>2655.04508964</td><td>6.68</td><td>0.0005</td></tr> <tr> <td>GENDER</td><td>1</td><td>1749.17808219</td><td>1749.17808219</td><td>4.40</td><td>0.0395</td></tr> <tr> <td>TRT*GENDER</td><td>3</td><td>1115.95907693</td><td>371.98635898</td><td>0.94</td><td>0.4281</td></tr> </tbody> </table>					Source	DF	Type III SS	Mean Square	F Value	Pr > F	TRT	3	7965.13526893	2655.04508964	6.68	0.0005	GENDER	1	1749.17808219	1749.17808219	4.40	0.0395	TRT*GENDER	3	1115.95907693	371.98635898	0.94	0.4281
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F																																																																																									
Model	7	10859.06905342	1551.29557906	3.90	0.0012																																																																																									
Error	71	28229.66302000	397.60088761																																																																																											
Corrected Total	78	39088.73207342																																																																																												
R-Square		C.V.	Root MSE	T3 Mean																																																																																										
0.277806		9.583339	19.93993199	208.06873418																																																																																										
<table border="1"> <thead> <tr> <th>Source</th><th>DF</th><th>Type I SS</th><th>Mean Square</th><th>F Value</th><th>Pr &gt; F</th></tr> </thead> <tbody> <tr> <td>TRT</td><td>3</td><td>7955.06851526</td><td>2651.68950509</td><td>6.67</td><td>0.0005</td></tr> <tr> <td>GENDER</td><td>1</td><td>1788.04146122</td><td>1788.04146122</td><td>4.50</td><td>0.0374</td></tr> <tr> <td>TRT*GENDER</td><td>3</td><td>1115.95907693</td><td>371.98635898</td><td>0.94</td><td>0.4281</td></tr> </tbody> </table>					Source	DF	Type I SS	Mean Square	F Value	Pr > F	TRT	3	7955.06851526	2651.68950509	6.67	0.0005	GENDER	1	1788.04146122	1788.04146122	4.50	0.0374	TRT*GENDER	3	1115.95907693	371.98635898	0.94	0.4281																																																																		
Source	DF	Type I SS	Mean Square	F Value	Pr > F																																																																																									
TRT	3	7955.06851526	2651.68950509	6.67	0.0005																																																																																									
GENDER	1	1788.04146122	1788.04146122	4.50	0.0374																																																																																									
TRT*GENDER	3	1115.95907693	371.98635898	0.94	0.4281																																																																																									
<table border="1"> <thead> <tr> <th>Source</th><th>DF</th><th>Type III SS</th><th>Mean Square</th><th>F Value</th><th>Pr &gt; F</th></tr> </thead> <tbody> <tr> <td>TRT</td><td>3</td><td>7965.13526893</td><td>2655.04508964</td><td>6.68</td><td>0.0005</td></tr> <tr> <td>GENDER</td><td>1</td><td>1749.17808219</td><td>1749.17808219</td><td>4.40</td><td>0.0395</td></tr> <tr> <td>TRT*GENDER</td><td>3</td><td>1115.95907693</td><td>371.98635898</td><td>0.94</td><td>0.4281</td></tr> </tbody> </table>					Source	DF	Type III SS	Mean Square	F Value	Pr > F	TRT	3	7965.13526893	2655.04508964	6.68	0.0005	GENDER	1	1749.17808219	1749.17808219	4.40	0.0395	TRT*GENDER	3	1115.95907693	371.98635898	0.94	0.4281																																																																		
Source	DF	Type III SS	Mean Square	F Value	Pr > F																																																																																									
TRT	3	7965.13526893	2655.04508964	6.68	0.0005																																																																																									
GENDER	1	1749.17808219	1749.17808219	4.40	0.0395																																																																																									
TRT*GENDER	3	1115.95907693	371.98635898	0.94	0.4281																																																																																									

1  
WPAFB 90-DAY PERCHLORATE - T3 DATA  
PROC GLM - STEPDOWN ANOVAS - MAIN EFFECT OF TRT  
NOTE: T3 DATA DAY 120 ONLY -- CONSERVATIVE APPROACH 08:42 Thursday, August 23, 2001 25

General Linear Models Procedure  
Duncan's Multiple Range Test for variable: T3

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha= 0.05 df= 71 MSE= 397.6009  
WARNING: Cell sizes are not equal.  
Harmonic Mean of cell sizes= 19.74026

Number of Means 2 3 4  
Critical Range 12.66 13.32 13.75

Means with the same letter are not significantly different.

Duncan Grouping	Mean	N	TRT
A	215.044	19	3----0.05
A	213.571	20	1-CONTROL
A	213.133	20	5----1.00

B 190.876 20 6---10.00

1

WPAFB 90-DAY PERCHLORATE - T3 DATA  
 PROC GLM - STEPDOWN ANOVAS - MAIN EFFECT OF TRT  
 NOTE: T3 DATA DAY 120 ONLY - LIBERAL APPROACH

08:42 Thursday, August 23, 2001 26

General Linear Models Procedure  
 Class Level Information

Class	Levels	Values
TRT	4	1-CONTROL 3----0.05 5---1.00 6---10.00
GENDER	2	F M

Number of observations in data set = 80

NOTE: Due to missing values, only 79 observations can be used in this analysis.

1

WPAFB 90-DAY PERCHLORATE - T3 DATA  
 PROC GLM - STEPDOWN ANOVAS - MAIN EFFECT OF TRT  
 NOTE: T3 DATA DAY 120 ONLY - LIBERAL APPROACH

08:42 Thursday, August 23, 2001 27

## General Linear Models Procedure

Dependent Variable: T3

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	4	9743.10997648	2435.77749412	6.14	0.0003
Error	74	29345.62209693	396.56246077		
Corrected Total	78	39088.73207342			

R-Square	C.V.	Root MSE	T3 Mean
0.249256	9.570816	19.91387609	208.06873418

Source	DF	Type I SS	Mean Square	F Value	Pr > F
TRT	3	7955.06851526	2651.68950509	6.69	0.0005
GENDER	1	1788.04146122	1788.04146122	4.51	0.0371

Source	DF	Type III SS	Mean Square	F Value	Pr > F
TRT	3	8021.71701614	2673.90567205	6.74	0.0004
GENDER	1	1788.04146122	1788.04146122	4.51	0.0371

1

WPAFB 90-DAY PERCHLORATE - T3 DATA  
 PROC GLM - STEPDOWN ANOVAS - MAIN EFFECT OF TRT  
 NOTE: T3 DATA DAY 120 ONLY - LIBERAL APPROACH

08:42 Thursday, August 23, 2001 28

## General Linear Models Procedure

## Duncan's Multiple Range Test for variable: T3

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha= 0.05 df= 74 MSE= 396.5625

WARNING: Cell sizes are not equal.

Harmonic Mean of cell sizes= 19.74026

Number of Means	2	3	4
Critical Range	12.63	13.29	13.72

Means with the same letter are not significantly different.

Duncan Grouping	Mean	N	TRT
A	215.044	19	3----0.05
A	213.571	20	1-CONTROL
A	213.133	20	5----1.00
B	190.876	20	6---10.00

1 WPAFB 90-DAY PERCHLORATE - T3 DATA 08:42 Thursday, August 23, 2001 29  
 PROC GLM - STEPDOWN ANOVAS BY DAY AND GENDER - MAIN EFFECT OF TREATMENT  
 NOTE: T3 DATA FOR DAY 90 AND 120 ONLY

----- DAY=15 GENDER=F -----

General Linear Models Procedure  
Class Level Information

Class	Levels	Values
TRT	6	1-CONTROL 2----0.01 3----0.05 4----0.20 5----1.00 6---10.00

Number of observations in by group = 60

NOTE: Due to missing values, only 59 observations can be used in this analysis.

1 WPAFB 90-DAY PERCHLORATE - T3 DATA 08:42 Thursday, August 23, 2001 30  
 PROC GLM - STEPDOWN ANOVAS BY DAY AND GENDER - MAIN EFFECT OF TREATMENT  
 NOTE: T3 DATA FOR DAY 90 AND 120 ONLY

----- DAY=15 GENDER=F -----

## General Linear Models Procedure

Dependent Variable: T3

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	5	909.12926017	181.82585203	1.23	0.3068
Error	53	7814.95475000	147.45197642		
Corrected Total	58	8724.08401017			
			R-Square	C.V.	Root MSE
					T3 Mean

	0.104209	9.373408	12.14298054	129.54711864
Source	DF	Type I SS	Mean Square	F Value
TRT	5	909.12926017	181.82585203	1.23
Source	DF	Type III SS	Mean Square	F Value
TRT	5	909.12926017	181.82585203	1.23

1 WPAFB 90-DAY PERCHLORATE - T3 DATA 08:42 Thursday, August 23, 2001 31  
 PROC GLM - STEPDOWN ANOVAS BY DAY AND GENDER - MAIN EFFECT OF TREATMENT  
 NOTE: T3 DATA FOR DAY 90 AND 120 ONLY

----- DAY=15 GENDER=F -----

#### General Linear Models Procedure

Duncan's Multiple Range Test for variable: T3

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha= 0.05 df= 53 MSE= 147.452

WARNING: Cell sizes are not equal.

Harmonic Mean of cell sizes= 9.818182

Number of Means	2	3	4	5	6
Critical Range	10.99	11.56	11.94	12.21	12.42

Means with the same letter are not significantly different.

Duncan Grouping	Mean	N	TRT
A	134.034	10	2----0.01
A	132.995	10	1-CONTROL
A	132.752	10	3----0.05
A	127.777	9	4----0.20
A	125.117	10	5----1.00
A	124.431	10	6---10.00

1 WPAFB 90-DAY PERCHLORATE - T3 DATA 08:42 Thursday, August 23, 2001 32  
 PROC GLM - STEPDOWN ANOVAS BY DAY AND GENDER - MAIN EFFECT OF TREATMENT  
 NOTE: T3 DATA FOR DAY 90 AND 120 ONLY

----- DAY=15 GENDER=M -----

#### General Linear Models Procedure

##### Class Level Information

Class	Levels	Values
TRT	6	1-CONTROL 2----0.01 3----0.05 4----0.20 5----1.00 6---10.00

Number of observations in by group = 60

NOTE: Due to missing values, only 54 observations can be used in this analysis.

1 WPAFB 90-DAY PERCHLORATE - T3 DATA 08:42 Thursday, August 23, 2001 33  
 PROC GLM - STEPDOWN ANOVAS BY DAY AND GENDER - MAIN EFFECT OF TREATMENT  
 NOTE: T3 DATA FOR DAY 90 AND 120 ONLY

----- DAY=15 GENDER=M -----

General Linear Models Procedure

Dependent Variable: T3

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	5	41746.85258037	8349.37051607	33.81	0.0001
Error	48	11852.02014000	246.91708625		
Corrected Total	53	53598.87272037			
		R-Square	C.V.	Root MSE	T3 Mean
		0.778876	10.68776	15.71359559	147.02425926

Source	DF	Type I SS	Mean Square	F Value	Pr > F
TRT	5	41746.85258037	8349.37051607	33.81	0.0001
Source	DF	Type III SS	Mean Square	F Value	Pr > F
TRT	5	41746.85258037	8349.37051607	33.81	0.0001

1 WPAFB 90-DAY PERCHLORATE - T3 DATA 08:42 Thursday, August 23, 2001 34  
 PROC GLM - STEPDOWN ANOVAS BY DAY AND GENDER - MAIN EFFECT OF TREATMENT  
 NOTE: T3 DATA FOR DAY 90 AND 120 ONLY

----- DAY=15 GENDER=M -----

General Linear Models Procedure

Duncan's Multiple Range Test for variable: T3

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha= 0.05 df= 48 MSE= 246.9171  
 WARNING: Cell sizes are not equal.  
 Harmonic Mean of cell sizes= 8.4375

Number of Means 2 3 4 5 6  
 Critical Range 15.38 16.18 16.70 17.08 17.37

Means with the same letter are not significantly different.

Duncan Grouping	Mean	N	TRT
-----------------	------	---	-----

A	200.012	10	1-CONTROL
B	163.626	5	2----0.01
C	141.197	10	4----0.20
C	138.040	9	3----0.05
D	123.757	10	5----1.00
D	122.916	10	6---10.00

1 WPAFB 90-DAY PERCHLORATE - T3 DATA 08:42 Thursday, August 23, 2001 35  
 PROC GLM - STEPDOWN ANOVAS BY DAY AND GENDER - MAIN EFFECT OF TREATMENT  
 NOTE: T3 DATA FOR DAY 90 AND 120 ONLY

----- DAY=90 GENDER=F -----

General Linear Models Procedure  
 Class Level Information

Class	Levels	Values
TRT	6	1-CONTROL 2----0.01 3----0.05 4----0.20 5----1.00 6---10.00

Number of observations in by group = 60

NOTE: Due to missing values, only 59 observations can be used in this analysis.

1 WPAFB 90-DAY PERCHLORATE - T3 DATA 08:42 Thursday, August 23, 2001 36  
 PROC GLM - STEPDOWN ANOVAS BY DAY AND GENDER - MAIN EFFECT OF TREATMENT  
 NOTE: T3 DATA FOR DAY 90 AND 120 ONLY

----- DAY=90 GENDER=F -----

General Linear Models Procedure

Dependent Variable: T3

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	5	15399.99727925	3079.99945585	14.69	0.0001
Error	53	11112.02160889	209.66078507		
Corrected Total	58	26512.01888813			

R-Square	C.V.	Root MSE	T3 Mean
0.580869	10.35866	14.47966799	139.78322034

Source	DF	Type I SS	Mean Square	F Value	Pr > F
TRT	5	15399.99727925	3079.99945585	14.69	0.0001
Source	DF	Type III SS	Mean Square	F Value	Pr > F
TRT	5	15399.99727925	3079.99945585	14.69	0.0001

1

WPAFB 90-DAY PERCHLORATE - T3 DATA 08:42 Thursday, August 23, 2001 37  
 PROC GLM - STEPDOWN ANOVAS BY DAY AND GENDER - MAIN EFFECT OF TREATMENT  
 NOTE: T3 DATA FOR DAY 90 AND 120 ONLY

----- DAY=90 GENDER=F -----

General Linear Models Procedure

Duncan's Multiple Range Test for variable: T3

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha= 0.05 df= 53 MSE= 209.6608

WARNING: Cell sizes are not equal.

Harmonic Mean of cell sizes= 9.818182

Number of Means	2	3	4	5	6
Critical Range	13.11	13.79	14.23	14.56	14.81

Means with the same letter are not significantly different.

Duncan Grouping	Mean	N	TRT
A	170.079	10	1-CONTROL
B	143.131	10	2----0.01
B	142.901	10	3----0.05
B	136.512	10	4----0.20
C	122.521	9	5----1.00
C	121.829	10	6---10.00

1

WPAFB 90-DAY PERCHLORATE - T3 DATA 08:42 Thursday, August 23, 2001 38  
 PROC GLM ~ STEPDOWN ANOVAS BY DAY AND GENDER - MAIN EFFECT OF TREATMENT  
 NOTE: T3 DATA FOR DAY 90 AND 120 ONLY

----- DAY=90 GENDER=M -----

General Linear Models Procedure  
 Class Level Information

Class	Levels	Values
TRT	6	1-CONTROL 2----0.01 3----0.05 4----0.20 5----1.00 6---10.00

Number of observations in by group = 60

1

WPAFB 90-DAY PERCHLORATE - T3 DATA 08:42 Thursday, August 23, 2001 39  
 PROC GLM - STEPDOWN ANOVAS BY DAY AND GENDER - MAIN EFFECT OF TREATMENT  
 NOTE: T3 DATA FOR DAY 90 AND 120 ONLY

----- DAY=90 GENDER=M -----

## General Linear Models Procedure

Dependent Variable: T3

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	5	32114.83755333	6422.96751067	29.79	0.0001
Error	54	11644.39872000	215.63701333		
Corrected Total	59	43759.23627333			
		R-Square	C.V.	Root MSE	T3 Mean
		0.733898	10.68636	14.68458421	137.41433333
Source	DF	Type I SS	Mean Square	F Value	Pr > F
TRT	5	32114.83755333	6422.96751067	29.79	0.0001
Source	DF	Type III SS	Mean Square	F Value	Pr > F
TRT	5	32114.83755333	6422.96751067	29.79	0.0001

1

WPAFB 90-DAY PERCHLORATE - T3 DATA 08:42 Thursday, August 23, 2001 40  
PROC GLM - STEPDOWN ANOVAS BY DAY AND GENDER - MAIN EFFECT OF TREATMENT  
NOTE: T3 DATA FOR DAY 90 AND 120 ONLY

----- DAY=90 GENDER=M -----

General Linear Models Procedure

Duncan's Multiple Range Test for variable: T3

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha= 0.05 df= 54 MSE= 215.637

Number of Means	2	3	4	5	6
Critical Range	13.17	13.85	14.30	14.63	14.88

Means with the same letter are not significantly different.

Duncan Grouping	Mean	N	TRT
A	179.837	10	1-CONTROL
B	157.464	10	2----0.01
C	125.037	10	3----0.05
C	123.209	10	4----0.20
C	121.792	10	5----1.00
C	117.147	10	6---10.00

## APPENDIX 5

### Rat Subchronic Study - TSH

Reference: Springborn Laboratories, Inc. (1998) A 90-day drinking water toxicity study in rats with ammonium perchlorate: amended final report [amended study completion date: June 3]. Spencerville, OH: Springborn Laboratories, Inc.; study no. 3455.1.

11

The SAS System

17:44 Tuesday, August 28, 2001

NOTE: Copyright (c) 1989-1996 by SAS Institute Inc., Cary, NC, USA.  
 NOTE: SAS (r) Proprietary Software Release 6.12 TS020  
 Licensed to US ENVIRONMENTAL PROTECTION AGENCY, Site 0019614059.

NOTE: Running on ALPHASERVER Model 2100 5/300 Serial Number 80000000.

Welcome to the NHEERL-RTP SAS Information Delivery System.

```

1      *THIS FILE IS FOUND AT [CROFTON.THYROID.PERCHLORATE]perchlorate_SUBCHRONIC_TSH.SAS;
2      *IT ANALYZES THE TSH THYROID HORMONE DATA FROM THE WPAFB 90 DAY PERCHLORATE STUDY;
3
4      *INPUT DATA INTO SAS DATASET;
5      DATA RAW; INFILE '[CROFTON.THYROID.PERCHLORATE] PERCHLORATE_SUBCHRONIC_TH.TXT';
6          INPUT ANIM GENDER$ DAY$ DOSE$ STUDYDAY T4 T3 TSH;
7
8      *DEFINITIONS OF VARIABLES;
9      *      ANIM = ANIMAL ID;
10     *      DAY = RANGE OF DAYS-ON-STUDY;
11     *      TRT = TREATMENT CODE;
12     *      STUDYDAY = DAY OF SAMPLING;
13     *      T4 = THYROXINE, ug/dl;
14     *      T3 = TRIIODOTHYRONINE, ng/ml;
15     *      TSH = THYROID STIMULATING HORMONE, ng/ml;
16
17     *ASSIGN TREATMENTS TO DOSAGE CODES IN MG/KG/DAY;
18     IF DOSE = '1' THEN TRT = '1-CONTROL';
19     IF DOSE = '2' THEN TRT = '2----0.01';
20     IF DOSE = '3' THEN TRT = '3----0.05';
21     IF DOSE = '4' THEN TRT = '4----0.20';
22     IF DOSE = '5' THEN TRT = '5----1.00';
23     IF DOSE = '6' THEN TRT = '6---10.00';
24
25     *REASSIGN DAY VARIABLE;
26     IF DAY = '15-18' THEN DAY = '15';
27     IF DAY = '92-95' THEN DAY = '90';
28     IF DAY = '97-123' THEN DAY = '120';
29
30     *PRINT THE RAW DATA FILE;

```

NOTE: The infile '[CROFTON.THYROID.PERCHLORATE] PERCHLORATE\_SUBCHRONIC\_TH.TXT' is:  
 File=DSA21:[SAS\$USERS.CROFTON.THYROID.PERCHLORATE] PERCHLORATE\_SUBCHRONIC\_TH.TXT

NOTE: 320 records were read from the infile '[CROFTON.THYROID.PERCHLORATE] PERCHLORATE\_SUBCHRONIC\_TH.TXT'.  
 The minimum record length was 58.

The maximum record length was 60.

NOTE: The data set WORK.RAW has 320 observations and 9 variables.

```

31     PROC PRINT;
32
33     *SORT DATA BY DAY, TRT AND GENDER -- THEN GET MEANS;
34
35

```

NOTE: The PROCEDURE PRINT printed pages 1-6.

35 PROC SORT; BY DAY TRT GENDER;

The SAS System

17:44 Tuesday, August 28, 2001

36

NOTE: The data set WORK.RAW has 320 observations and 9 variables.

36 PROC MEANS N MEAN STDERR MIN MAX STD VAR CV;

37 BY DAY TRT GENDER;

38 VAR TSH;

39

40

NOTE: The PROCEDURE MEANS printed pages 7-11.

40 PROC SORT; BY DAY TRT;

41

NOTE: Input data set is already sorted, no sorting done.

41 PROC MEANS N MEAN STDERR MIN MAX STD VAR CV;

42 BY DAY TRT;

43 VAR TSH;

44

45

NOTE: The PROCEDURE MEANS printed pages 12-14.

45 PROC SORT; BY GENDER TRT;

46

NOTE: The data set WORK.RAW has 320 observations and 9 variables.

46 PROC MEANS N MEAN STDERR MIN MAX STD VAR CV;

47 BY GENDER TRT;

48 VAR TSH;

49

50

51 \*RUN SEPARATE TWO WAY ANOVAS - GENDER\*TRT FOR EACH DAY;

52 \* THIS WAS DONE BECAUSE DATA ON DAY 120 IS INCOMPLETE FOR THE DOSE RESPONSE;

53 \* THIS APPROACH WAS RECOMMENDED BY THE PEER REVIEW;

54

55

NOTE: The PROCEDURE MEANS printed pages 15-16.

55 PROC SORT; BY DAY GENDER TRT;

56

NOTE: The data set WORK.RAW has 320 observations and 9 variables.

56 PROC GLM; BY DAY;

57 CLASSES GENDER TRT;

58 MODEL TSH = GENDER|TRT;

59 TITLE1 "WPAFB 90-DAY PERCHLORATE - TSH DATA";

```

60      TITLE2 "PROC GLMs BY DAY - GENDER BY TRT INTERACTIONS";
61
62      *STEPDOWN ANOVA ANALYSES FOR TSH DATA - STEPDOWNS BY DAY;
63
64      *STEPDOWN ANOVAS FOR DAYS 90 AND 120;
65      * THERE WAS NO GENDER X TRT INTERACTION SO TWO APPROACHES WERE TAKEN TO RUN;
13                           The SAS System
66      * THE MEAN CONTRASTS AS RECOMMENDED BY THE PEER REVIEW AND CONSULTATION WITH;
67      * ALLAN MARCUS;
68
69      * THE APPROACH RECOMMENDED BY THE PEER REVIEW WAS TO INCLUDE ANY SIGNIFICANT;
70      * MAIN EFFECTS IN THE STEPDOWN ANOVAS - THIS IS THE 'LIBERAL' APPROACH;
71      * THE APPROACH RECOMMENDED BY CONSULTATION WITH ALLAN MARCUS WAS TO CONTRAST;
72      * THE LIBERAL APPROACH WITH A MORE 'CONSERVATIVE' APPROACH IN WHICH ALL;
73      * MEAN CONTRASTS ARE DONE WITH THE FIT TO THE FULL MODEL WHICH WILL MAXIMIZE;
74      * THE LIKELIHOOD OF DETECTING A DIFFERENCE BETWEEN MEANS;
75

```

17:44 Tuesday, August 28, 2001

NOTE: The PROCEDURE GLM printed pages 17-22.

```

76      DATA RAW3; SET RAW;
77          IF DAY = '15' THEN DELETE;
78
79      *THIS IS THE 'CONSERVATIVE' APPROACH AND FITS THE FULL MODEL TO MINIMIZE;
80      * THE ERROR TERM. THIS WILL MAXIMIZE THE LIKELIHOOD OF DETECTING A;
81      * SIGNIFICANT DIFFERENCE BETWEEN TREATMENT GROUPS;
82
83

```

NOTE: The data set WORK.RAW3 has 200 observations and 9 variables.

```

83      PROC SORT; BY DAY TRT GENDER;
84

```

NOTE: The data set WORK.RAW3 has 200 observations and 9 variables.

```

84      PROC GLM; BY DAY;
85          CLASSES TRT GENDER;
86          MODEL TSH = TRT|GENDER;
87          MEANS TRT/DUNCAN LINES;
88          TITLE1 "    WPAFB 90-DAY PERCHLORATE - TSH DATA";
89          TITLE2 "PROC GLM - STEPDOWN ANOVAS - MAIN EFFECT OF TRT";
90          TITLE3 "NOTE: TSH DATA DAY 120 ONLY -- CONSERVATIVE APPROACH";
91
92      *LESS CONSERVATIVE STEPDOWN'S - ONLY INCLUDES MAIN EFFECTS WITH p less than 0.05;
93

```

NOTE: Means from the MEANS statement are not adjusted for other terms in the model. For adjusted means, use the LSMEANS statement.  
 NOTE: The above message was for the following by-group:

DAY=120

NOTE: Means from the MEANS statement are not adjusted for other terms in the model. For adjusted means, use the LSMEANS statement.  
 NOTE: The above message was for the following by-group:

DAY=90

NOTE: The PROCEDURE GLM printed pages 23-28.

```

93      PROC GLM; BY DAY;

```

```

94      CLASSES TRT GENDER;
95      MODEL TSH = TRT GENDER;
96      MEANS TRT/DUNCAN LINES;
97          TITLE1 " WPAFB 90-DAY PERCHLORATE - TSH DATA";
98          TITLE2 "PROC GLM - STEPDOWN ANOVAS - MAIN EFFECT OF TRT";
99          TITLE3 " NOTE: TSH DATA DAY 120 ONLY - LIBERAL APPROACH";
100
101
102      *STEPDOWN ANOVA ANALYSES FOR TSH DATA FOR DAY 15 - STEPDOWNS BY GENDER;
103          * THESE STEPDOWNS WERE CONDUCTED BY GENDER SINCE THERE WAS A HIGHLY;
104          * SIGNIFICANT INTERACTION BETWEEN GENDER AND TREATMENT ON THESE DAYS;
105

```

17:44 Tuesday, August 28, 2001

NOTE: Means from the MEANS statement are not adjusted for other terms in the model. For adjusted means, use the LSMEANS statement.  
 NOTE: The above message was for the following by-group:  
 DAY=120  
 NOTE: Means from the MEANS statement are not adjusted for other terms in the model. For adjusted means, use the LSMEANS statement.  
 NOTE: The above message was for the following by-group:  
 DAY=90  
 NOTE: The PROCEDURE GLM printed pages 29-34.

```

106      DATA RAW4; SET RAW;
107
108          IF DAY = '90' THEN DELETE;
109          IF DAY = '120' THEN DELETE;
110
111

```

NOTE: The data set WORK.RAW4 has 120 observations and 9 variables.

```

111      PROC SORT; BY GENDER TRT;
112

```

NOTE: The data set WORK.RAW4 has 120 observations and 9 variables.

```

112      PROC GLM; BY GENDER;
113          CLASSES TRT;
114          MODEL TSH = TRT;
115          MEANS TRT/DUNCAN LINES;
116              TITLE1 " WPAFB 90-DAY PERCHLORATE - TSH DATA" ;
117              TITLE2 "PROC GLM - STEPDOWN ANOVAS BY DAY AND GENDER - MAIN EFFECT OF TREATMENT";
118              TITLE3 " NOTE: TSH DATA FOR DAY 90 AND 120 ONLY ";
119
120      ENDSAS;

```

NOTE: The PROCEDURE GLM printed pages 35-40.

```

NOTE: SAS Institute Inc., SAS Campus Drive, Cary, NC USA 27513-2414
1

```

The SAS System

17:44 Tuesday, August 28, 2001 1

OBS	ANIM	GENDER	DAY	DOSE	STUDYDAY	T4	T3	TSH	TRT
1	11716	M	15	1	18	6.05	203.72	15.74	1-CONTROL
2	11717	M	15	1	15	6.39	226.49	13.32	1-CONTROL
3	11718	M	15	1	16	5.10	200.14	13.08	1-CONTROL

	OBS	ANIM	GENDER	DAY	DOSE	STUDYDAY	T4	T3	TSH	TRT
4	11719	M		120	1	121	3.70	205.66	19.56	1-CONTROL
5	11720	M		15	1	15	5.64	208.45	13.72	1-CONTROL
6	11721	M		90	1	92	4.61	204.69	15.71	1-CONTROL
7	11722	M		120	1	121	5.25	187.41	22.83	1-CONTROL
8	11723	M		120	1	121	4.89	198.23	23.47	1-CONTROL
9	11724	M		90	1	92	5.02	182.65	14.38	1-CONTROL
10	11725	M		15	1	17	6.64	186.23	14.20	1-CONTROL
11	11726	M		120	1	121	5.07	174.51	20.12	1-CONTROL
12	11727	M		120	1	122	5.22	238.28	22.54	1-CONTROL
13	11728	M		15	1	17	5.88	234.21	16.38	1-CONTROL
14	11729	M		90	1	92	4.96	158.23	15.18	1-CONTROL
15	11730	M		120	1	122	5.10	212.19	19.79	1-CONTROL
16	11731	M		15	1	16	4.84	205.08	13.21	1-CONTROL
17	11732	M		90	1	93	4.63	156.89	17.72	1-CONTROL
18	11733	M		120	1	122	5.11	188.45	19.11	1-CONTROL
19	11734	M		90	1	93	6.35	189.84	17.50	1-CONTROL
20	11735	M		90	1	94	5.19	179.28	15.39	1-CONTROL
21	11736	M		90	1	94	5.12	215.33	17.61	1-CONTROL
22	11737	M		120	1	123	5.02	190.22	19.99	1-CONTROL
23	11738	M		90	1	94	4.37	160.86	14.98	1-CONTROL
24	11739	M		15	1	15	5.42	178.53	15.52	1-CONTROL
25	11740	M		120	1	123	4.75	234.82	19.91	1-CONTROL
26	11741	M		90	1	95	4.97	171.09	14.79	1-CONTROL
27	11742	M		90	1	95	5.38	179.51	18.61	1-CONTROL
28	11743	M		120	1	123	5.39	204.43	21.96	1-CONTROL
29	11744	M		15	1	18	5.29	170.16	17.45	1-CONTROL
30	11745	M		15	1	17	5.19	187.11	15.30	1-CONTROL
31	11746	M		90	2	92	3.22	158.15	16.27	2----0.01
32	11747	M		15	2	18	5.10	173.23	15.22	2----0.01
33	11748	M		90	2	92	4.22	155.40	16.87	2----0.01
34	11749	M		90	2	92	4.70	136.19	15.95	2----0.01
35	11750	M		90	2	93	4.23	152.61	17.54	2----0.01
36	11751	M		15	2	.	.	.	.	2----0.01
37	11752	M		90	2	93	4.12	154.06	15.40	2----0.01
38	11753	M		90	2	94	4.76	144.06	15.46	2----0.01
39	11754	M		90	2	94	4.38	186.86	14.96	2----0.01
40	11755	M		90	2	94	4.49	149.51	20.14	2----0.01
41	11756	M		15	2	17	4.23	170.49	12.76	2----0.01
42	11757	M		15	2	17	5.21	154.81	17.63	2----0.01
43	11758	M		15	2	.	.	.	.	2----0.01
44	11759	M		15	2	.	.	.	.	2----0.01
45	11760	M		15	2	17	6.03	136.30	18.41	2----0.01
46	11761	M		90	2	95	4.65	151.61	19.51	2----0.01
47	11762	M		15	2	.	.	.	.	2----0.01
48	11763	M		15	2	.	.	.	.	2----0.01
49	11764	M		15	2	18	5.70	183.30	16.49	2----0.01
50	11765	M		90	2	95	4.79	186.19	16.31	2----0.01
51	11766	M		15	3	16	5.06	136.55	16.30	3----0.05
52	11767	M		120	3	121	4.12	204.77	17.66	3----0.05
53	11768	M		15	3	17	5.55	167.33	16.44	3----0.05
54	11769	M		90	3	92	3.16	119.70	15.67	3----0.05
55	11770	M		120	3	121	3.61	200.87	22.11	3----0.05
56	11771	M		15	3	18	5.27	150.95	19.63	3----0.05

1

The SAS System

17:44 Tuesday, August 28, 2001 2

57	11772	M	15	3	18	4.65	141.88	14.89	3---0.05
58	11773	M	120	3	121	3.91	202.65	19.85	3---0.05
59	11774	M	90	3	92	3.28	124.63	17.77	3---0.05
60	11775	M	120	3	121	4.55	218.02	21.22	3---0.05
61	11776	M	90	3	92	3.30	131.45	15.41	3---0.05
62	11777	M	90	3	93	3.96	134.26	17.50	3---0.05
63	11778	M	15	3	.	.	.	.	3---0.05
64	11779	M	15	3	15	5.50	119.88	17.61	3---0.05
65	11780	M	90	3	93	4.06	119.90	17.19	3---0.05
66	11781	M	120	3	122	3.89	215.05	21.18	3---0.05
67	11782	M	120	3	122	3.39	208.74	20.83	3---0.05
68	11783	M	120	3	122	4.64	218.37	20.47	3---0.05
69	11784	M	15	3	17	5.26	121.66	17.17	3---0.05
70	11785	M	120	3	123	4.15	265.28	23.61	3---0.05
71	11786	M	15	3	15	5.05	139.26	15.92	3---0.05
72	11787	M	90	3	94	3.89	112.96	18.14	3---0.05
73	11788	M	120	3	123	3.99	198.57	22.25	3---0.05
74	11789	M	15	3	15	5.58	136.44	15.96	3---0.05
75	11790	M	90	3	94	3.95	107.63	18.40	3---0.05
76	11791	M	90	3	94	3.21	119.83	20.45	3---0.05
77	11792	M	90	3	95	3.64	122.87	20.22	3---0.05
78	11793	M	15	3	17	5.00	128.41	17.63	3---0.05
79	11794	M	90	3	95	3.87	157.14	17.59	3---0.05
80	11795	M	120	3	123	4.18	209.55	24.12	3---0.05
81	11797	M	90	4	92	3.89	106.68	18.81	4---0.20
82	11798	M	15	4	16	5.21	157.43	17.67	4---0.20
83	11799	M	90	4	92	3.61	103.68	17.78	4---0.20
84	11800	M	90	4	92	2.92	130.58	18.73	4---0.20
85	11801	M	15	4	17	4.36	129.67	15.45	4---0.20
86	11802	M	15	4	18	5.57	137.40	18.91	4---0.20
87	11803	M	15	4	15	4.91	135.51	16.67	4---0.20
88	11804	M	15	4	17	5.59	144.84	18.93	4---0.20
89	11805	M	90	4	93	3.71	132.97	20.76	4---0.20
90	11806	M	90	4	93	4.05	134.56	18.61	4---0.20
91	11807	M	15	4	15	4.99	172.39	20.03	4---0.20
92	11808	M	15	4	17	5.32	120.11	19.50	4---0.20
93	11809	M	90	4	94	3.66	126.89	21.29	4---0.20
94	11810	M	15	4	15	5.58	125.26	17.75	4---0.20
95	11811	M	90	4	94	3.21	144.36	21.26	4---0.20
96	11812	M	90	4	94	3.04	121.08	16.24	4---0.20
97	11813	M	15	4	16	4.99	138.63	15.95	4---0.20
98	11814	M	90	4	95	3.40	117.95	19.24	4---0.20
99	11815	M	90	4	95	3.46	113.34	16.98	4---0.20
100	11816	M	15	5	15	5.58	122.39	19.93	5---1.00
101	11817	M	90	5	92	3.87	134.53	17.31	5---1.00
102	11818	M	15	5	18	4.84	130.71	20.27	5---1.00
103	11819	M	15	5	15	5.17	139.56	17.39	5---1.00
104	11820	M	15	5	17	4.69	137.44	17.03	5---1.00
105	11821	M	120	5	121	3.83	244.75	22.33	5---1.00
106	11822	M	90	5	92	3.14	133.28	17.50	5---1.00
107	11823	M	120	5	121	4.02	206.00	19.39	5---1.00
108	11824	M	90	5	92	3.84	115.98	20.27	5---1.00
109	11825	M	15	5	18	4.92	133.18	20.87	5---1.00
110	11826	M	120	5	121	3.81	206.00	22.63	5---1.00
111	11827	M	90	5	93	3.32	112.16	18.98	5---1.00
112	11828	M	120	5	121	4.16	223.91	23.48	5---1.00

OBS	ANIM	GENDER	DAY	DOSE	STUDYDAY	T4	T3	TSH	TRT
113	11829	M	120	5	122	3.51	254.48	20.96	5----1.00
114	11830	M	90	5	93	3.59	103.33	21.52	5----1.00
115	11831	M	15	5	16	6.06	101.61	18.72	5----1.00
116	11832	M	90	5	94	2.79	112.78	20.06	5----1.00
117	11833	M	120	5	122	4.27	195.01	21.06	5----1.00
118	11834	M	120	5	122	3.92	202.03	24.20	5----1.00
119	11835	M	15	5	15	4.81	125.91	21.75	5----1.00
120	11836	M	15	5	17	4.86	109.93	16.11	5----1.00
121	11837	M	120	5	123	4.29	183.56	21.72	5----1.00
122	11838	M	120	5	123	3.68	194.21	23.70	5----1.00
123	11839	M	15	5	16	5.24	124.57	17.48	5----1.00
124	11840	M	90	5	94	3.20	138.69	17.42	5----1.00
125	11841	M	90	5	94	3.61	129.19	18.96	5----1.00
126	11842	M	90	5	95	3.82	114.27	18.97	5----1.00
127	11843	M	120	5	123	4.39	206.09	22.05	5----1.00
128	11844	M	15	5	17	5.74	112.27	18.45	5----1.00
129	11845	M	90	5	95	3.49	123.71	19.41	5----1.00
130	11846	M	15	6	17	3.99	105.59	25.16	6---10.00
131	11847	M	15	6	16	4.19	117.76	26.50	6---10.00
132	11848	M	15	6	15	4.69	122.59	22.67	6---10.00
133	11849	M	120	6	121	3.46	190.62	22.86	6---10.00
134	11850	M	120	6	121	3.18	185.98	21.11	6---10.00
135	11851	M	90	6	92	2.75	106.87	19.09	6---10.00
136	11852	M	90	6	92	2.57	116.65	20.13	6---10.00
137	11853	M	15	6	18	3.79	128.35	24.52	6---10.00
138	11854	M	90	6	92	2.97	112.98	18.47	6---10.00
139	11855	M	120	6	121	3.81	180.99	20.10	6---10.00
140	11856	M	120	6	122	2.76	219.28	21.07	6---10.00
141	11857	M	15	6	17	4.69	135.80	26.22	6---10.00
142	11858	M	15	6	17	3.99	146.43	27.80	6---10.00
143	11859	M	15	6	16	3.91	110.88	21.02	6---10.00
144	11860	M	90	6	93	2.67	119.68	22.82	6---10.00
145	11861	M	15	6	15	4.75	114.73	23.81	6---10.00
146	11862	M	90	6	93	3.10	104.26	20.88	6---10.00
147	11863	M	15	6	18	4.78	114.40	22.24	6---10.00
148	11864	M	120	6	122	3.79	195.49	28.12	6---10.00
149	11865	M	120	6	122	3.51	176.59	20.70	6---10.00
150	11866	M	90	6	94	3.09	147.54	17.05	6---10.00
151	11867	M	90	6	94	2.86	120.92	16.19	6---10.00
152	11868	M	120	6	122	3.35	194.26	24.69	6---10.00
153	11869	M	120	6	123	3.63	165.40	24.10	6---10.00
154	11870	M	15	6	15	4.33	132.63	20.43	6---10.00
155	11871	M	90	6	94	2.73	119.44	18.40	6---10.00
156	11872	M	90	6	95	2.58	113.67	19.99	6---10.00
157	11873	M	90	6	95	3.53	109.46	17.55	6---10.00
158	11874	M	120	6	123	3.54	174.10	23.61	6---10.00
159	11875	M	120	6	123	3.29	163.56	21.52	6---10.00
160	11876	F	90	1	92	3.73	208.41	17.32	1-CONTROL
161	11877	F	15	1	16	4.89	133.28	9.89	1-CONTROL
162	11878	F	15	1	15	4.23	146.98	9.49	1-CONTROL
163	11879	F	120	1	121	2.93	218.73	12.16	1-CONTROL
164	11880	F	120	1	121	3.25	247.56	12.15	1-CONTROL
165	11881	F	15	1	15	4.45	148.52	9.00	1-CONTROL
166	11882	F	15	1	16	4.33	113.01	10.51	1-CONTROL

1	167	11883	F	120	1	121	3.12	269.33	11.21	1-CONTROL
	168	11884	F	15	1	17	4.87	141.79	10.86	1-CONTROL
	The SAS System									
	OBS	ANIM	GENDER	DAY	DOSE	STUDYDAY	T4	T3	TSH	TRT
169	11885	F	120	1	122	3.50	208.59	14.29	1-CONTROL	
170	11886	F	90	1	92	4.39	176.30	17.27	1-CONTROL	
171	11887	F	120	1	122	4.02	221.72	12.48	1-CONTROL	
172	11888	F	120	1	122	3.53	221.68	14.27	1-CONTROL	
173	11889	F	15	1	16	3.47	115.12	11.30	1-CONTROL	
174	11890	F	90	1	93	4.11	156.30	16.97	1-CONTROL	
175	11891	F	90	1	93	4.38	184.05	13.65	1-CONTROL	
176	11892	F	90	1	93	4.70	162.70	16.06	1-CONTROL	
177	11893	F	15	1	17	4.81	125.46	10.27	1-CONTROL	
178	11894	F	15	1	18	4.36	155.28	11.15	1-CONTROL	
179	11895	F	90	1	94	4.10	174.56	16.51	1-CONTROL	
180	11896	F	90	1	94	5.28	178.38	17.15	1-CONTROL	
181	11897	F	120	1	122	3.76	233.84	12.22	1-CONTROL	
182	11898	F	120	1	123	3.70	204.67	12.56	1-CONTROL	
183	11899	F	120	1	123	3.67	201.68	15.44	1-CONTROL	
184	11900	F	15	1	18	4.75	117.27	10.57	1-CONTROL	
185	11901	F	90	1	95	4.75	157.34	15.31	1-CONTROL	
186	11902	F	90	1	95	4.25	154.03	19.14	1-CONTROL	
187	11903	F	15	1	18	4.72	133.24	11.36	1-CONTROL	
188	11904	F	90	1	95	4.72	148.72	15.41	1-CONTROL	
189	11905	F	120	1	123	3.41	209.42	13.98	1-CONTROL	
190	11906	F	15	2	18	4.48	144.32	11.86	2----0.01	
191	11907	F	90	2	92	3.61	161.10	17.85	2----0.01	
192	11908	F	15	2	15	4.39	134.14	11.83	2----0.01	
193	11909	F	15	2	15	4.59	134.16	10.33	2----0.01	
194	11910	F	90	2	92	3.73	133.70	15.76	2----0.01	
195	11911	F	15	2	16	4.58	134.89	10.03	2----0.01	
196	11912	F	15	2	16	4.74	142.55	13.47	2----0.01	
197	11913	F	15	2	16	4.60	113.00	10.78	2----0.01	
198	11914	F	90	2	93	3.60	153.42	17.47	2----0.01	
199	11915	F	90	2	93	3.36	140.29	14.80	2----0.01	
200	11916	F	90	2	93	3.18	122.90	19.76	2----0.01	
201	11917	F	15	2	18	3.24	147.24	13.71	2----0.01	
202	11918	F	90	2	94	3.30	126.23	19.48	2----0.01	
203	11919	F	90	2	94	3.10	136.10	15.89	2----0.01	
204	11920	F	90	2	95	3.46	158.85	16.64	2----0.01	
205	11921	F	15	2	17	4.44	128.84	11.46	2----0.01	
206	11922	F	90	2	95	4.29	134.94	14.45	2----0.01	
207	11923	F	15	2	18	3.83	145.91	11.36	2----0.01	
208	11924	F	90	2	95	3.58	163.78	15.73	2----0.01	
209	11925	F	15	2	17	4.34	115.29	12.35	2----0.01	
210	11926	F	120	3	121	3.67	211.08	14.44	3----0.05	
211	11927	F	90	3	92	4.15	158.08	15.59	3----0.05	
212	11928	F	120	3	121	3.04	204.05	17.93	3----0.05	
213	11929	F	90	3	92	3.80	126.88	18.02	3----0.05	
214	11930	F	15	3	15	4.20	125.94	11.10	3----0.05	
215	11931	F	15	3	15	4.37	145.96	11.46	3----0.05	
216	11932	F	120	3	121	3.15	221.45	13.94	3----0.05	
217	11933	F	120	3	122	3.84	218.24	15.58	3----0.05	
218	11934	F	15	3	16	4.80	132.98	12.22	3----0.05	
219	11935	F	90	3	93	3.41	156.25	17.08	3----0.05	

220	11936	F	90	3	93	3.11	147.68	15.48	3----0.05
221	11937	F	90	3	93	3.28	110.79	16.63	3----0.05
222	11938	F	90	3	94	3.12	139.42	19.78	3----0.05
223	11939	F	90	3	94	3.25	135.47	15.18	3----0.05
224	11940	F	120	3	122	3.03	258.55	16.66	3----0.05
1					The SAS System				17:44 Tuesday, August 28, 2001 5
OBS	ANIM	GENDER	DAY	DOSE	STUDYDAY	T4	T3	TSH	TRT
225	11941	F	15	3	17	4.86	111.65	13.98	3----0.05
226	11942	F	15	3	17	4.03	130.30	11.33	3----0.05
227	11943	F	120	3	122	3.88	214.89	13.95	3----0.05
228	11944	F	120	3	122	3.45	207.28	15.61	3----0.05
229	11945	F	15	3	16	4.40	131.63	13.56	3----0.05
230	11946	F	15	3	18	3.95	147.82	12.23	3----0.05
231	11947	F	120	3	123	3.23	203.40	14.29	3----0.05
232	11948	F	120	3	97	.	.	.	3----0.05
233	11949	F	120	3	123	2.94	205.03	18.39	3----0.05
234	11950	F	90	3	95	3.70	162.59	19.24	3----0.05
235	11951	F	15	3	18	4.27	144.64	13.57	3----0.05
236	11952	F	15	3	18	3.51	142.07	11.93	3----0.05
237	11953	F	15	3	16	4.16	114.53	12.01	3----0.05
238	11954	F	90	3	95	3.10	147.70	16.32	3----0.05
239	11955	F	90	3	95	3.03	144.15	15.13	3----0.05
240	11956	F	90	4	92	4.19	127.84	15.39	4----0.20
241	11957	F	90	4	92	3.40	113.07	17.08	4----0.20
242	11958	F	90	4	93	3.25	123.47	17.42	4----0.20
243	11959	F	15	4	16	4.25	128.36	10.56	4----0.20
244	11960	F	15	4	17	5.02	112.29	13.46	4----0.20
245	11961	F	90	4	93	3.19	151.66	17.53	4----0.20
246	11962	F	15	4	17	4.41	109.23	14.15	4----0.20
247	11963	F	15	4	15	4.20	140.54	10.88	4----0.20
248	11964	F	15	4	16	3.32	119.77	14.12	4----0.20
249	11965	F	90	4	93	3.35	149.43	16.31	4----0.20
250	11966	F	90	4	94	3.19	120.01	15.26	4----0.20
251	11967	F	15	4	18	4.56	137.82	11.46	4----0.20
252	11968	F	15	4	16	4.11	133.36	12.00	4----0.20
253	11969	F	90	4	94	3.32	154.35	19.95	4----0.20
254	11970	F	15	4	18	3.72	134.40	12.23	4----0.20
255	11971	F	15	4	15	4.04	134.22	12.46	4----0.20
256	11972	F	90	4	95	3.70	147.47	19.64	4----0.20
257	11973	F	90	4	95	3.18	140.71	17.38	4----0.20
258	11974	F	15	4	.	.	.	.	4----0.20
259	11975	F	90	4	95	3.10	137.11	17.83	4----0.20
260	11976	M	15	4	18	5.05	150.73	18.80	4----0.20
261	11976	F	90	5	92	3.02	122.86	17.75	5----1.00
262	11977	F	15	5	16	4.02	139.95	13.07	5----1.00
263	11978	F	120	5	121	3.34	205.43	16.46	5----1.00
264	11979	F	120	5	121	3.83	229.47	15.81	5----1.00
265	11980	F	120	5	121	2.77	219.83	15.98	5----1.00
266	11981	F	120	5	122	3.14	228.10	16.03	5----1.00
267	11982	F	15	5	18	3.45	122.78	12.33	5----1.00
268	11983	F	90	5	92	3.10	116.09	18.81	5----1.00
269	11984	F	15	5	17	4.30	109.93	10.13	5----1.00
270	11985	F	120	5	122	3.51	232.28	16.24	5----1.00
271	11986	F	120	5	122	2.97	193.81	17.84	5----1.00
272	11987	F	120	5	122	2.97	202.03	12.35	5----1.00

273	11988	F	90	5	93	3.41	116.59	16.26	5----1.00
274	11989	F	15	5	16	4.46	121.80	12.02	5----1.00
275	11990	F	90	5	93	2.90	107.73	19.20	5----1.00
276	11991	F	15	5	18	3.67	117.29	13.48	5----1.00
277	11992	F	15	5	18	3.81	127.88	11.70	5----1.00
278	11993	F	90	5	93	3.78	135.30	18.76	5----1.00
279	11994	F	15	5	16	4.60	138.22	12.48	5----1.00
280	11995	F	90	5	.	.	.	.	5----1.00

1 The SAS System 17:44 Tuesday, August 28, 2001 6

OBS	ANIM	GENDER	DAY	DOSE	STUDYDAY	T4	T3	TSH	TRT
281	11996	F	90	5	94	3.43	117.29	15.69	5----1.00
282	11997	F	90	5	95	3.18	137.19	18.27	5----1.00
283	11998	F	90	5	95	2.79	124.03	14.97	5----1.00
284	11999	F	120	5	123	3.34	180.62	14.78	5----1.00
285	12000	F	90	5	95	3.04	125.61	18.93	5----1.00
286	12001	F	15	5	15	4.61	108.50	13.14	5----1.00
287	12002	F	120	5	123	3.31	246.40	16.60	5----1.00
288	12003	F	15	5	17	4.05	135.76	14.91	5----1.00
289	12004	F	120	5	123	3.41	208.65	15.44	5----1.00
290	12005	F	15	5	15	4.07	129.06	12.63	5----1.00
291	12006	F	90	6	92	2.92	126.60	20.28	6---10.00
292	12007	F	90	6	92	2.50	111.83	19.83	6---10.00
293	12008	F	120	6	121	3.31	195.96	17.08	6---10.00
294	12009	F	120	6	121	2.87	215.38	17.25	6---10.00
295	12010	F	15	6	15	4.07	137.80	15.15	6---10.00
296	12011	F	90	6	93	3.22	137.55	20.37	6---10.00
297	12012	F	90	6	93	2.92	129.39	18.10	6---10.00
298	12013	F	15	6	17	3.59	131.10	17.43	6---10.00
299	12014	F	120	6	121	3.81	172.26	16.07	6---10.00
300	12015	F	120	6	122	2.71	167.80	15.84	6---10.00
301	12016	F	15	6	16	3.79	117.79	16.54	6---10.00
302	12017	F	120	6	122	2.93	180.85	17.41	6---10.00
303	12018	F	90	6	93	2.95	136.33	20.36	6---10.00
304	12019	F	90	6	94	3.49	105.91	18.91	6---10.00
305	12020	F	120	6	122	2.83	214.31	18.24	6---10.00
306	12021	F	15	6	15	4.16	122.40	14.00	6---10.00
307	12022	F	90	6	94	3.11	124.02	21.38	6---10.00
308	12023	F	15	6	16	3.54	137.35	15.40	6---10.00
309	12024	F	120	6	123	3.40	182.94	14.44	6---10.00
310	12025	F	90	6	95	3.03	100.54	16.93	6---10.00
311	12026	F	15	6	18	3.09	109.03	19.37	6---10.00
312	12027	F	120	6	123	2.96	197.80	15.30	6---10.00
313	12028	F	15	6	16	3.42	126.12	14.76	6---10.00
314	12029	F	90	6	95	3.08	121.42	21.55	6---10.00
315	12030	F	15	6	17	3.40	112.99	17.88	6---10.00
316	12031	F	15	6	18	3.98	119.65	17.14	6---10.00
317	12032	F	15	6	18	3.35	130.08	17.94	6---10.00
318	12033	F	90	6	95	2.69	124.70	22.59	6---10.00
319	12034	F	120	6	123	3.23	213.65	14.55	6---10.00
320	12035	F	120	6	123	2.90	230.29	14.03	6---10.00

1 The SAS System 17:44 Tuesday, August 28, 2001 7

Analysis Variable : TSH

----- DAY=120 TRT=1-CONTROL GENDER=F -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
10	13.0760000	0.4194949	11.2100000	15.4400000	1.3265595	1.7597600	10.1449943

----- DAY=120 TRT=1-CONTROL GENDER=M -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
10	20.9280000	0.5031408	19.1100000	23.4700000	1.5910709	2.5315067	7.6025942

----- DAY=120 TRT=3----0.05 GENDER=F -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
9	15.6433333	0.5634714	13.9400000	18.3900000	1.6904142	2.8575000	10.8059716

----- DAY=120 TRT=3----0.05 GENDER=M -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
10	21.3300000	0.5880363	17.6600000	24.1200000	1.8595340	3.4578667	8.7179278

----- DAY=120 TRT=5----1.00 GENDER=F -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
10	15.7530000	0.4541978	12.3500000	17.8400000	1.4362996	2.0629567	9.1176261

----- DAY=120 TRT=5----1.00 GENDER=M -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
10	22.1520000	0.4601130	19.3900000	24.2000000	1.4550052	2.1170400	6.5682790

----- DAY=120 TRT=6---10.00 GENDER=F -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
10	16.0210000	0.4554325	14.0300000	18.2400000	1.4402041	2.0741878	8.9894768

Analysis Variable : TSH

----- DAY=120 TRT=6----10.00 GENDER=M -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
10	22.7880000	0.7703546	20.1000000	28.1200000	2.4360752	5.9344622	10.6901666

----- DAY=15 TRT=1-CONTROL GENDER=F -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
10	10.4400000	0.2493503	9.0000000	11.3600000	0.7885148	0.6217556	7.5528235

----- DAY=15 TRT=1-CONTROL GENDER=M -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
10	14.7920000	0.4757866	13.0800000	17.4500000	1.5045693	2.2637289	10.1715071

----- DAY=15 TRT=2----0.01 GENDER=F -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
10	11.7180000	0.3847100	10.0300000	13.7100000	1.2165598	1.4800178	10.3819748

----- DAY=15 TRT=2----0.01 GENDER=M -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
5	16.1020000	0.9939588	12.7600000	18.4100000	2.2225593	4.9397700	13.8030017

----- DAY=15 TRT=3----0.05 GENDER=F -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
10	12.3390000	0.3219125	11.1000000	13.9800000	1.0179768	1.0362767	8.2500750

----- DAY=15 TRT=3----0.05 GENDER=M -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
9	16.8388889	0.4562055	14.8900000	19.6300000	1.3686165	1.8731111	8.1277126

1

The SAS System

17:44 Tuesday, August 28, 2001 9

Analysis Variable : TSH

----- DAY=15 TRT=4 --- 0.20 GENDER=F -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
9	12.3688889	0.4395055	10.5600000	14.1500000	1.3185166	1.7384861	10.6599440

----- DAY=15 TRT=4 --- 0.20 GENDER=M -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
10	17.9660000	0.4869136	15.4500000	20.0300000	1.5397561	2.3708489	8.5703891

----- DAY=15 TRT=5 --- 1.00 GENDER=F -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
10	12.5890000	0.3938033	10.1300000	14.9100000	1.2453152	1.5508100	9.8920901

----- DAY=15 TRT=5 --- 1.00 GENDER=M -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
10	18.8000000	0.5836057	16.1100000	21.7500000	1.8455231	3.4059556	9.8166123

----- DAY=15 TRT=6 --- 10.00 GENDER=F -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
10	16.5610000	0.5350378	14.0000000	19.3700000	1.6919381	2.8626544	10.2164004

----- DAY=15 TRT=6 --- 10.00 GENDER=M -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
10	24.0370000	0.7727915	20.4300000	27.8000000	2.4437815	5.9720678	10.1667490

----- DAY=90 TRT=1-CONTROL GENDER=F -----

	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
1	10	16.4790000	0.4689739	13.6500000	19.1400000	1.4830258	2.1993656	8.9994891
The SAS System								
17:44 Tuesday, August 28, 2001 10								
Analysis Variable : TSH								
----- DAY=90 TRT=1-CONTROL GENDER=M -----								
	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
1	10	16.1870000	0.4774982	14.3800000	18.6100000	1.5099820	2.2800456	9.3283621
----- DAY=90 TRT=2----0.01 GENDER=F -----								
	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
1	10	16.7830000	0.5782657	14.4500000	19.7600000	1.8286367	3.3439122	10.8957678
----- DAY=90 TRT=2----0.01 GENDER=M -----								
	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
1	10	16.8410000	0.5519671	14.9600000	20.1400000	1.7454732	3.0466767	10.3644272
----- DAY=90 TRT=3----0.05 GENDER=F -----								
	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
1	10	16.8450000	0.5297762	15.1300000	19.7800000	1.6752993	2.8066278	9.9453803
----- DAY=90 TRT=3----0.05 GENDER=M -----								
	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
1	10	17.8340000	0.5174622	15.4100000	20.4500000	1.6363591	2.6776711	9.1755024
----- DAY=90 TRT=4----0.20 GENDER=F -----								
	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
1	10	17.3790000	0.4902209	15.2600000	19.9500000	1.5502147	2.4031656	8.9200453

----- DAY=90 TRT=4----0.20 GENDER=M -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
10	18.9700000	0.5471685	16.2400000	21.2900000	1.7302986	2.9939333	9.1212368

1 The SAS System 17:44 Tuesday, August 28, 2001 11

Analysis Variable : TSH

----- DAY=90 TRT=5----1.00 GENDER=F -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
9	17.6266667	0.5265744	14.9700000	19.2000000	1.5797231	2.4955250	8.9621203

----- DAY=90 TRT=5----1.00 GENDER=M -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
10	19.0400000	0.4326199	17.3100000	21.5200000	1.3680643	1.8716000	7.1852118

----- DAY=90 TRT=6---10.00 GENDER=F -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
10	20.0300000	0.5333625	16.9300000	22.5900000	1.6866403	2.8447556	8.4205707

----- DAY=90 TRT=6---10.00 GENDER=M -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
10	19.0570000	0.6218379	16.1900000	22.8200000	1.9664240	3.8668233	10.3186440

1 The SAS System 17:44 Tuesday, August 28, 2001 12

Analysis Variable : TSH

----- DAY=120 TRT=1-CONTROL -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
20	17.0020000	0.9554427	11.2100000	23.4700000	4.2728699	18.2574168	25.1315719

----- DAY=120 TRT=3---0.05 -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
19	18.6363158	0.7782903	13.9400000	24.1200000	3.3924888	11.5089801	18.2036451

----- DAY=120 TRT=5----1.00 -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
20	18.9525000	0.7986106	12.3500000	24.2000000	3.5714952	12.7555776	18.8444540

----- DAY=120 TRT=6---10.00 -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
20	19.4045000	0.8900610	14.0300000	28.1200000	3.9804740	15.8441734	20.5131491

----- DAY=15 TRT=1-CONTROL -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
20	12.6160000	0.5635155	9.0000000	17.4500000	2.5201178	6.3509937	19.9755691

----- DAY=15 TRT=2---0.01 -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
15	13.1793333	0.6801404	10.0300000	18.4100000	2.6341723	6.9388638	19.9871439

----- DAY=15 TRT=3---0.05 -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
19	14.4705263	0.5929106	11.1000000	19.6300000	2.5844373	6.6793164	17.8600093

1

The SAS System

17:44 Tuesday, August 28, 2001 13

Analysis Variable : TSH

----- DAY=15 TRT=4---0.20 -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
19	15.3147368	0.7327743	10.5600000	20.0300000	3.1940889	10.2022041	20.8563096

----- DAY=15 TRT=5---1.00 -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
20	15.6945000	0.7905586	10.1300000	21.7500000	3.5354855	12.4996576	22.5269074

----- DAY=15 TRT=6---10.00 -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
20	20.2990000	0.9719289	14.0000000	27.8000000	4.3465981	18.8929147	21.4128679

----- DAY=90 TRT=1-CONTROL -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
20	16.3330000	0.3274343	13.6500000	19.1400000	1.4643306	2.1442642	8.9654726

----- DAY=90 TRT=2---0.01 -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
20	16.8120000	0.3891019	14.4500000	20.1400000	1.7401168	3.0280063	10.3504446

----- DAY=90 TRT=3---0.05 -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
20	17.3395000	0.3778377	15.1300000	20.4500000	1.6897414	2.8552261	9.7450412

----- DAY=90 TRT=4---0.20 -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
20	18.1745000	0.4014129	15.2600000	21.2900000	1.7951733	3.2226471	9.8774287

1

The SAS System

17:44 Tuesday, August 28, 2001 14

Analysis Variable : TSH

----- DAY=90 TRT=5---1.00 -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
19	18.3705263	0.3678231	14.9700000	21.5200000	1.6033038	2.5705830	8.7275877

----- DAY=90 TRT=6---10.00 -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
20	19.5435000	0.4140234	16.1900000	22.8200000	1.8515691	3.4283082	9.4740917

1 The SAS System 17:44 Tuesday, August 28, 2001 15

Analysis Variable : TSH

----- GENDER=F TRT=1-CONTROL -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
30	13.3316667	0.5080456	9.0000000	19.1400000	2.7826805	7.7433109	20.8727130

----- GENDER=F TRT=2---0.01 -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
20	14.2505000	0.6721656	10.0300000	19.7600000	3.0060159	9.0361313	21.0941080

----- GENDER=F TRT=3---0.05 -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
29	14.9182759	0.4519073	11.1000000	19.7800000	2.4335953	5.9223862	16.3128457

----- GENDER=F TRT=4---0.20 -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
19	15.0057895	0.6719894	10.5600000	19.9500000	2.9291340	8.5798257	19.5200257

----- GENDER=F TRT=5---1.00 -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
29	15.2434483	0.4664390	10.1300000	19.2000000	2.5118509	6.3093948	16.4782327

----- GENDER=F TRT=6---10.00 -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
30	17.5373333	0.4350891	14.0000000	22.5900000	2.3830811	5.6790754	13.5886171

----- GENDER=M TRT=1-CONTROL -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
30	17.3023333	0.5576939	13.0800000	23.4700000	3.0546151	9.3306737	17.6543538

1 The SAS System 17:44 Tuesday, August 28, 2001 16

Analysis Variable : TSH

----- GENDER=M TRT=2---0.01 -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
15	16.5946667	0.4830438	12.7600000	20.1400000	1.8708205	3.4999695	11.2736254

----- GENDER=M TRT=3---0.05 -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
29	18.7306897	0.4682264	14.8900000	24.1200000	2.5214762	6.3578424	13.4617373

----- GENDER=M TRT=4---0.20 -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
20	18.4680000	0.3745985	15.4500000	21.2900000	1.6752552	2.8064800	9.0711241

----- GENDER=M TRT=5---1.00 -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
30	19.9973333	0.3960700	16.1100000	24.2000000	2.1693650	4.7061444	10.8482713

----- GENDER=M TRT=6---10.00 -----

N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV

30 21.9606667 0.5634759 16.1900000 28.1200000 3.0862844 9.5251513 14.0536917  
 -----  
 1 WPAFB 90-DAY PERCHLORATE - TSH DATA 17:44 Tuesday, August 28, 2001 17  
 PROC GLMs BY DAY - GENDER BY TRT INTERACTIONS

----- DAY=120 -----

General Linear Models Procedure  
Class Level Information

Class	Levels	Values
GENDER	2	F M
TRT	4	1-CONTROL 3---0.05 5---1.00 6---10.00

Number of observations in by group = 80

NOTE: Due to missing values, only 79 observations can be used in this analysis.

1 WPAFB 90-DAY PERCHLORATE - TSH DATA 17:44 Tuesday, August 28, 2001 18  
 PROC GLMs BY DAY - GENDER BY TRT INTERACTIONS

----- DAY=120 -----

General Linear Models Procedure

Dependent Variable: TSH

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	7	960.83781038	137.26254434	48.17	0.0001
Error	71	202.30002000	2.84929606		
Corrected Total	78	1163.13783038			
		R-Square	C.V.	Root MSE	TSH Mean
		0.826074	9.125684	1.68798580	18.49708861

Source	DF	Type I SS	Mean Square	F Value	Pr > F
GENDER	1	883.65924038	883.65924038	310.13	0.0001
TRT	3	65.20583440	21.73527813	7.63	0.0002
GENDER*TRT	3	11.97273560	3.99091187	1.40	0.2497
Source	DF	Type III SS	Mean Square	F Value	Pr > F
GENDER	1	879.21273918	879.21273918	308.57	0.0001
TRT	3	65.22139160	21.74046387	7.63	0.0002
GENDER*TRT	3	11.97273560	3.99091187	1.40	0.2497

1

WPAFB 90-DAY PERCHLORATE - TSH DATA  
 PROC GLMS BY DAY - GENDER BY TRT INTERACTIONS

17:44 Tuesday, August 28, 2001 19

----- DAY=15 -----

General Linear Models Procedure  
 Class Level Information

Class	Levels	Values
GENDER	2	F M
TRT	6	1-CONTROL 2----0.01 3----0.05 4----0.20 5----1.00 6---10.00

Number of observations in by group = 120

NOTE: Due to missing values, only 113 observations can be used in this analysis.

1

WPAFB 90-DAY PERCHLORATE - TSH DATA  
 PROC GLMS BY DAY - GENDER BY TRT INTERACTIONS

17:44 Tuesday, August 28, 2001 20

----- DAY=15 -----

General Linear Models Procedure

Dependent Variable: TSH

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	11	1602.51377479	145.68307044	60.62	0.0001
Error	101	242.72889778	2.40325641		
Corrected Total	112	1845.24267257			
		R-Square	C.V.	Root MSE	TSH Mean
		0.868457	10.09204	1.55024399	15.36106195
Source	DF	Type I SS	Mean Square	F Value	Pr > F
GENDER	1	891.16998685	891.16998685	370.82	0.0001
TRT	5	673.77298493	134.75459699	56.07	0.0001
GENDER*TRT	5	37.57080301	7.51416060	3.13	0.0115
Source	DF	Type III SS	Mean Square	F Value	Pr > F
GENDER	1	799.82803361	799.82803361	332.81	0.0001
TRT	5	679.18440435	135.83688087	56.52	0.0001
GENDER*TRT	5	37.57080301	7.51416060	3.13	0.0115

1

WPAFB 90-DAY PERCHLORATE - TSH DATA  
 PROC GLMS BY DAY - GENDER BY TRT INTERACTIONS

17:44 Tuesday, August 28, 2001 21

----- DAY=90 -----

General Linear Models Procedure  
 Class Level Information

Class	Levels	Values
GENDER	2	F M
TRT	6	1-CONTROL 2----0.01 3----0.05 4----0.20 5----1.00 6---10.00

Number of observations in by group = 120

NOTE: Due to missing values, only 119 observations can be used in this analysis.

1

WPAFB 90-DAY PERCHLORATE - TSH DATA  
 PROC GLMS BY DAY - GENDER BY TRT INTERACTIONS

17:44 Tuesday, August 28, 2001 22

----- DAY=90 -----

General Linear Models Procedure

Dependent Variable: TSH

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	11	168.55748059	15.32340733	5.60	0.0001
Error	107	292.97539000	2.73808776		
Corrected Total	118	461.53287059			
					TSH Mean
R-Square		C.V.	Root MSE		
		0.365212	9.318642	1.65471682	17.75705882
Source	DF	Type I SS	Mean Square	F Value	Pr > F
GENDER	1	6.46361632	6.46361632	2.36	0.1274
TRT	5	136.09129453	27.21825891	9.94	0.0001
GENDER*TRT	5	26.00256973	5.20051395	1.90	0.1004
Source	DF	Type III SS	Mean Square	F Value	Pr > F
GENDER	1	6.41035606	6.41035606	2.34	0.1289
TRT	5	135.50899487	27.10179897	9.90	0.0001
GENDER*TRT	5	26.00256973	5.20051395	1.90	0.1004

1

WPAFB 90-DAY PERCHLORATE - TSH DATA

17:44 Tuesday, August 28, 2001 23

PROC GLM - STEPDOWN ANOVAS - MAIN EFFECT OF TRT  
 NOTE: TSH DATA DAY 120 ONLY -- CONSERVATIVE APPROACH

----- DAY=120 -----

General Linear Models Procedure  
 Class Level Information

Class	Levels	Values
TRT	4	1-CONTROL 3----0.05 5----1.00 6---10.00
GENDER	2	F M

Number of observations in by group = 80

NOTE: Due to missing values, only 79 observations can be used in this analysis.

1 WPAFB 90-DAY PERCHLORATE - TSH DATA 17:44 Tuesday, August 28, 2001 24  
 PROC GLM - STEPDOWN ANOVAS - MAIN EFFECT OF TRT  
 NOTE: TSH DATA DAY 120 ONLY -- CONSERVATIVE APPROACH

----- DAY=120 -----

General Linear Models Procedure

Dependent Variable: TSH

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	7	960.83781038	137.26254434	48.17	0.0001
Error	71	202.30002000	2.84929606		
Corrected Total	78	1163.13783038			
		R-Square	C. V.	Root MSE	TSH Mean
		0.826074	9.125684	1.68798580	18.49708861

Source	DF	Type I SS	Mean Square	F Value	Pr > F
TRT	3	65.68999827	21.89666609	7.68	0.0002
GENDER	1	883.17507651	883.17507651	309.96	0.0001
TRT*GENDER	3	11.97273560	3.99091187	1.40	0.2497
Source	DF	Type III SS	Mean Square	F Value	Pr > F
TRT	3	65.22139160	21.74046387	7.63	0.0002
GENDER	1	879.21273918	879.21273918	308.57	0.0001
TRT*GENDER	3	11.97273560	3.99091187	1.40	0.2497

1

WPAFB 90-DAY PERCHLORATE - TSH DATA  
 PROC GLM - STEPDOWN ANOVAS - MAIN EFFECT OF TRT  
 NOTE: TSH DATA DAY 120 ONLY -- CONSERVATIVE APPROACH

17:44 Tuesday, August 28, 2001 25

----- DAY=120 -----

## General Linear Models Procedure

## Duncan's Multiple Range Test for variable: TSH

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha= 0.05 df= 71 MSE= 2.849296  
 WARNING: Cell sizes are not equal.  
 Harmonic Mean of cell sizes= 19.74026

Number of Means	2	3	4
Critical Range	1.071	1.127	1.164

Means with the same letter are not significantly different.

Duncan Grouping	Mean	N	TRT
A	19.4045	20	6---10.00
A	18.9525	20	5----1.00
A	18.6363	19	3----0.05
B	17.0020	20	1-CONTROL

1

WPAFB 90-DAY PERCHLORATE - TSH DATA  
 PROC GLM - STEPDOWN ANOVAS - MAIN EFFECT OF TRT  
 NOTE: TSH DATA DAY 120 ONLY -- CONSERVATIVE APPROACH

17:44 Tuesday, August 28, 2001 26

----- DAY=90 -----

General Linear Models Procedure  
Class Level Information

Class	Levels	Values
TRT	6	1-CONTROL 2----0.01 3----0.05 4----0.20 5----1.00 6---10.00
GENDER	2	F M

Number of observations in by group = 120

NOTE: Due to missing values, only 119 observations can be used in this analysis.

1

WPAFB 90-DAY PERCHLORATE - TSH DATA  
 PROC GLM - STEPDOWN ANOVAS - MAIN EFFECT OF TRT  
 NOTE: TSH DATA DAY 120 ONLY -- CONSERVATIVE APPROACH

17:44 Tuesday, August 28, 2001 27

-----

DAY=90

## General Linear Models Procedure

Dependent Variable: TSH

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	11	168.55748059	15.32340733	5.60	0.0001
Error	107	292.97539000	2.73808776		
Corrected Total	118	461.53287059			
	R-Square	C.V.	Root MSE		TSH Mean
	0.365212	9.318642	1.65471682		17.75705882
Source	DF	Type I SS	Mean Square	F Value	Pr > F
TRT	5	136.37179085	27.27435817	9.96	0.0001
GENDER	1	6.18312000	6.18312000	2.26	0.1359
TRT*GENDER	5	26.00256973	5.20051395	1.90	0.1004
Source	DF	Type III SS	Mean Square	F Value	Pr > F
TRT	5	135.50899487	27.10179897	9.90	0.0001
GENDER	1	6.41035606	6.41035606	2.34	0.1289
TRT*GENDER	5	26.00256973	5.20051395	1.90	0.1004

1

WPAFB 90-DAY PERCHLORATE - TSH DATA  
 PROC GLM - STEPDOWN ANOVAS - MAIN EFFECT OF TRT  
 NOTE: TSH DATA DAY 120 ONLY -- CONSERVATIVE APPROACH

17:44 Tuesday, August 28, 2001 28

-----

## General Linear Models Procedure

Duncan's Multiple Range Test for variable: TSH

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha= 0.05 df= 107 MSE= 2.738088  
 WARNING: Cell sizes are not equal.  
 Harmonic Mean of cell sizes= 19.82609

Number of Means	2	3	4	5	6
Critical Range	1.042	1.096	1.133	1.159	1.180

Means with the same letter are not significantly different.

Duncan Grouping	Mean	N	TRT
-----------------	------	---	-----

	A	19.5435	20	6---10.00
	B	18.3705	19	5----1.00
	B	18.1745	20	4----0.20
	B	17.3395	20	3----0.05
C	B	16.8120	20	2----0.01
C		16.3330	20	1-CONTROL

1 WPAFB 90-DAY PERCHLORATE - TSH DATA 17:44 Tuesday, August 28, 2001 29  
 PROC GLM - STEPDOWN ANOVAS - MAIN EFFECT OF TRT  
 NOTE: TSH DATA DAY 120 ONLY - LIBERAL APPROACH

----- DAY=120 -----

General Linear Models Procedure  
 Class Level Information

Class	Levels	Values
TRT	4	1-CONTROL 3----0.05 5----1.00 6---10.00
GENDER	2	F M

Number of observations in by group = 80

NOTE: Due to missing values, only 79 observations can be used in this analysis.

1 WPAFB 90-DAY PERCHLORATE - TSH DATA 17:44 Tuesday, August 28, 2001 30  
 PROC GLM - STEPDOWN ANOVAS - MAIN EFFECT OF TRT  
 NOTE: TSH DATA DAY 120 ONLY - LIBERAL APPROACH

----- DAY=120 -----

General Linear Models Procedure

Dependent Variable: TSH

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	4	948.86507478	237.21626869	81.92	0.0001
Error	74	214.27275560	2.89557778		
Corrected Total	78	1163.13783038			
R-Square		C.V.	Root MSE	TSH Mean	
0.815780		9.199500	1.70163973	18.49708861	

Source	DF	Type I SS	Mean Square	F Value	Pr > F
TRT	3	65.68999827	21.89666609	7.56	0.0002
GENDER	1	883.17507651	883.17507651	305.01	0.0001
Source	DF	Type III SS	Mean Square	F Value	Pr > F
TRT	3	65.20583440	21.73527813	7.51	0.0002
GENDER	1	883.17507651	883.17507651	305.01	0.0001

1 WPAFB 90-DAY PERCHLORATE - TSH DATA 17:44 Tuesday, August 28, 2001 31  
 PROC GLM - STEPDOWN ANOVAS - MAIN EFFECT OF TRT  
 NOTE: TSH DATA DAY 120 ONLY - LIBERAL APPROACH

----- DAY=120 -----

#### General Linear Models Procedure

Duncan's Multiple Range Test for variable: TSH

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha= 0.05 df= 74 MSE= 2.895578

WARNING: Cell sizes are not equal.

Harmonic Mean of cell sizes= 19.74026

Number of Means	2	3	4
Critical Range	1.079	1.136	1.173

Means with the same letter are not significantly different.

Duncan Grouping	Mean	N	TRT
A	19.4045	20	6---10.00
A	18.9525	20	5----1.00
A	18.6363	19	3----0.05
B	17.0020	20	1-CONTROL

1 WPAFB 90-DAY PERCHLORATE - TSH DATA 17:44 Tuesday, August 28, 2001 32  
 PROC GLM - STEPDOWN ANOVAS - MAIN EFFECT OF TRT  
 NOTE: TSH DATA DAY 120 ONLY - LIBERAL APPROACH

----- DAY=90 -----

#### General Linear Models Procedure

##### Class Level Information

Class	Levels	Values
-------	--------	--------

TRT	6	1-CONTROL 2----0.01 3----0.05 4----0.20 5----1.00 6---10.00
GENDER	2	F M

Number of observations in by group = 120

NOTE: Due to missing values, only 119 observations can be used in this analysis.

1 WPAFB 90-DAY PERCHLORATE - TSH DATA 17:44 Tuesday, August 28, 2001 33  
 PROC GLM - STEPDOWN ANOVAS - MAIN EFFECT OF TRT  
 NOTE: TSH DATA DAY 120 ONLY - LIBERAL APPROACH

----- DAY=90 -----

#### General Linear Models Procedure

Dependent Variable: TSH

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	6	142.55491085	23.75915181	8.34	0.0001
Error	112	318.97795973	2.84801750		
Corrected Total	118	461.53287059			
		R-Square	C.V.	Root MSE	TSH Mean
		0.308873	9.503866	1.68760703	17.75705882

Source	DF	Type I SS	Mean Square	F Value	Pr > F
TRT	5	136.37179085	27.27435817	9.58	0.0001
GENDER	1	6.18312000	6.18312000	2.17	0.1434

Source	DF	Type III SS	Mean Square	F Value	Pr > F
TRT	5	136.09129453	27.21825891	9.56	0.0001
GENDER	1	6.18312000	6.18312000	2.17	0.1434

1 WPAFB 90-DAY PERCHLORATE - TSH DATA 17:44 Tuesday, August 28, 2001 34  
 PROC GLM - STEPDOWN ANOVAS - MAIN EFFECT OF TRT  
 NOTE: TSH DATA DAY 120 ONLY - LIBERAL APPROACH

----- DAY=90 -----

#### General Linear Models Procedure

Duncan's Multiple Range Test for variable: TSH

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha= 0.05 df= 112 MSE= 2.848017  
 WARNING: Cell sizes are not equal.  
 Harmonic Mean of cell sizes= 19.82609

Number of Means 2 3 4 5 6  
 Critical Range 1.062 1.118 1.155 1.182 1.203

Means with the same letter are not significantly different.

Duncan Grouping	Mean	N	TRT
A	19.5435	20	6---10.00
B	18.3705	19	5----1.00
B	18.1745	20	4----0.20
B	17.3395	20	3----0.05
C	16.8120	20	2----0.01
C	16.3330	20	1-CONTROL

1 WPAFB 90-DAY PERCHLORATE - TSH DATA 17:44 Tuesday, August 28, 2001 35  
 PROC GLM - STEPDOWN ANOVAS BY DAY AND GENDER - MAIN EFFECT OF TREATMENT  
 NOTE: TSH DATA FOR DAY 90 AND 120 ONLY

----- GENDER=F -----

General Linear Models Procedure  
 Class Level Information

Class	Levels	Values
TRT	6	1-CONTROL 2----0.01 3----0.05 4----0.20 5----1.00 6---10.00

Number of observations in by group = 60

NOTE: Due to missing values, only 59 observations can be used in this analysis.

1 WPAFB 90-DAY PERCHLORATE - TSH DATA 17:44 Tuesday, August 28, 2001 36  
 PROC GLM - STEPDOWN ANOVAS BY DAY AND GENDER - MAIN EFFECT OF TREATMENT  
 NOTE: TSH DATA FOR DAY 90 AND 120 ONLY

----- GENDER=F -----

General Linear Models Procedure

Dependent Variable: TSH

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	5	212.16693535	42.43338707	27.47	0.0001

Error	53	81.87151889	1.54474564
Corrected Total	58	294.03845424	
R-Square		C.V.	Root MSE
0.721562		9.806202	1.24287797
Source	DF	Type I SS	Mean Square
TRT	5	212.16693535	42.43338707
Source	DF	Type III SS	Mean Square
TRT	5	212.16693535	42.43338707
			F Value
			27.47
			Pr > F
			0.0001
			Pr > F
			0.0001

1 WPAFB 90-DAY PERCHLORATE - TSH DATA 17:44 Tuesday, August 28, 2001 37  
 PROC GLM - STEPDOWN ANOVAS BY DAY AND GENDER - MAIN EFFECT OF TREATMENT  
 NOTE: TSH DATA FOR DAY 90 AND 120 ONLY

----- GENDER=F -----

#### General Linear Models Procedure

#### Duncan's Multiple Range Test for variable: TSH

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha= 0.05 df= 53 MSE= 1.544746

WARNING: Cell sizes are not equal.

Harmonic Mean of cell sizes= 9.818182

Number of Means	2	3	4	5	6
Critical Range	1.125	1.183	1.222	1.250	1.271

Means with the same letter are not significantly different.

Duncan Grouping	Mean	N	TRT
A	16.5610	10	6---10.00
B	12.5890	10	5----1.00
B	12.3689	9	4----0.20
B	12.3390	10	3----0.05
B	11.7180	10	2----0.01
C	10.4400	10	1-CONTROL

1 WPAFB 90-DAY PERCHLORATE - TSH DATA 17:44 Tuesday, August 28, 2001 38  
 PROC GLM - STEPDOWN ANOVAS BY DAY AND GENDER - MAIN EFFECT OF TREATMENT  
 NOTE: TSH DATA FOR DAY 90 AND 120 ONLY

----- GENDER=M -----

General Linear Models Procedure  
 Class Level Information

Class	Levels	Values
TRT	6	1-CONTROL 2---0.01 3---0.05 4---0.20 5---1.00 6---10.00

Number of observations in by group = 60

NOTE: Due to missing values, only 54 observations can be used in this analysis.

1 WPAFB 90-DAY PERCHLORATE - TSH DATA 17:44 Tuesday, August 28, 2001 39  
 PROC GLM - STEPDOWN ANOVAS BY DAY AND GENDER - MAIN EFFECT OF TREATMENT  
 NOTE: TSH DATA FOR DAY 90 AND 120 ONLY

----- GENDER=M -----

General Linear Models Procedure

Dependent Variable: TSH

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	5	499.17685259	99.83537052	29.79	0.0001
Error	48	160.85737889	3.35119539		
Corrected Total	53	660.03423148			
		R-Square	C.V.	Root MSE	TSH Mean
		0.756289	10.00535	1.83062705	18.29648148

Source	DF	Type I SS	Mean Square	F Value	Pr > F
TRT	5	499.17685259	99.83537052	29.79	0.0001
Source	DF	Type III SS	Mean Square	F Value	Pr > F
TRT	5	499.17685259	99.83537052	29.79	0.0001

1 WPAFB 90-DAY PERCHLORATE - TSH DATA 17:44 Tuesday, August 28, 2001 40  
 PROC GLM - STEPDOWN ANOVAS BY DAY AND GENDER - MAIN EFFECT OF TREATMENT  
 NOTE: TSH DATA FOR DAY 90 AND 120 ONLY

----- GENDER=M -----

General Linear Models Procedure

Duncan's Multiple Range Test for variable: TSH

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha= 0.05 df= 48 MSE= 3.351195

WARNING: Cell sizes are not equal.

Harmonic Mean of cell sizes= 8.4375

Number of Means	2	3	4	5	6
Critical Range	1.792	1.885	1.946	1.990	2.023

Means with the same letter are not significantly different.

Duncan Grouping		Mean	N	TRT
	A	24.0370	10	6---10.00
	B	18.8000	10	5----1.00
	B			
C	B	17.9660	10	4----0.20
C				
C		16.8389	9	3----0.05
C				
C	D	16.1020	5	2----0.01
C	D			
	D	14.7920	10	1-CONTROL

## APPENDIX 6

### Rat 14-Day "Caldwell Study"

Reference: Caldwell, D. J.; King, J. H., Jr.; Kinkead, E. R.; Wolfe, R. E.; Narayanan, L.; Mattie, D. R. (1995) Results of a fourteen day oral-dosing toxicity study of ammonium perchlorate. In: Proceedings of the 1995 JANNAF safety and environmental protection subcommittee meeting: volume 1; December; Tampa, FL. Columbia, MD: Chemical Propulsion Information Agency; Joint Army, Navy, NASA, Air Force (JANNAF) interagency propulsion committee publication 634.

11

The SAS System

12:37 Saturday, September 22, 2001

NOTE: Copyright (c) 1989-1996 by SAS Institute Inc., Cary, NC, USA.  
 NOTE: SAS (r) Proprietary Software Release 6.12 TS020  
 Licensed to US ENVIRONMENTAL PROTECTION AGENCY, Site 0019614059.  
 NOTE: Running on ALPHASERVER Model 2100 5/300 Serial Number 80000000.

Welcome to the NHEERL-RTP SAS Information Delivery System.

```

1      *THIS FILE IS FOUND AT [CROFTON.THYROID.perchlorate]perchlorate_14day.SAS;
2      *IT ANALYZES THE THYROID HORMONE DATA FROM THE WPAFB 90 DAY PERCHLORATE STUDY;
3
4
5      *INPUT DATA INTO SAS DATASET;
6      DATA RAW; INFILE '[CROFTON.THYROID.PERCHLORATE]PERCHLORATE_14DAY.DAT';
7          INPUT WPAFB $ 1-10 ANIM DOSE $ SEX$ hTg rT3 T4 T3 TSH;
8
9      *ASSIGN DOSAGE VALUES TO TREATMENT CODES;
10     IF DOSE = '0' THEN TRT = '1----CONTROL';
11     IF DOSE = '1.25' THEN TRT = '2---1.25_mg/L';
12     IF DOSE = '5' THEN TRT = '3----5.0_mg/L';
13     IF DOSE = '12.5' THEN TRT = '4---12.5_mg/L';
14     IF DOSE = '25' THEN TRT = '5---25.0_mg/L';
15     IF DOSE = '50' THEN TRT = '6---50.0_mg/L';
16     IF DOSE = '125' THEN TRT = '7--125.0_mg/L';
17     IF DOSE = '250' THEN TRT = '8--250.0_mg/L';
18

```

NOTE: The infile '[CROFTON.THYROID.PERCHLORATE]PERCHLORATE\_14DAY.DAT' is:  
 File=DSA21:[SAS\$USERS.CROFTON.THYROID.PERCHLORATE]PERCHLORATE\_14DAY.DAT

NOTE: 96 records were read from the infile '[CROFTON.THYROID.PERCHLORATE]PERCHLORATE\_14DAY.DAT'.  
 The minimum record length was 78.  
 The maximum record length was 79.

NOTE: The data set WORK.RAW has 96 observations and 10 variables.

```

19      PROC PRINT;
20
21      *SORT DATA BY TRT AND SEX -- THEN GET MEANS;
22
23

```

NOTE: The PROCEDURE PRINT printed pages 1-2.

```

23      PROC SORT; BY TRT SEX;
24

```

NOTE: The data set WORK.RAW has 96 observations and 10 variables.

```

24      PROC MEANS N MEAN STDERR MIN MAX STD VAR CV;
25          BY TRT SEX;
26          VAR hTg rT3 T3 T4 TSH;
27
28

```

NOTE: The PROCEDURE MEANS printed pages 3-6.

```

12                               The SAS System           12:37 Saturday, September 22, 2001
28         PROC SORT; BY TRT;
29

NOTE: Input data set is already sorted, no sorting done.

29         PROC MEANS N MEAN STDERR MIN MAX STD VAR CV;
30             BY TRT;
31             VAR hTg rT3 T3 T4 TSH;
32
33     *RUN TWO WAY ANOVAs - SEX*TRT - FOR T4LL VARIABLES;
34

```

NOTE: The PROCEDURE MEANS printed pages 7-8.

```

34         PROC SORT; BY SEX TRT;
35

```

NOTE: The data set WORK.RAW has 96 observations and 10 variables.

```

35         PROC GLM;
36             CLASSES SEX TRT;
37             MODEL hTg rT3 T3 T4 TSH = SEX|TRT;
38             TITLE1 "WPAFB 14-DAY PERCHLORATE - ALL VARIABLES";
39             TITLE2 "PROC GLM - SEX BY TRT INTERACTIONS";
40
41     *STEPDOWN ANOVAS BY GENDER FOR hTg, T3 and TSH;
42

```

NOTE: The PROCEDURE GLM printed pages 9-14.

```

42         PROC SORT; BY SEX;
43

```

NOTE: Input data set is already sorted, no sorting done.

```

43         PROC GLM; BY SEX ;
44             CLASSES TRT;
45             MODEL hTg T3 TSH = TRT;
46             MEANS TRT/DUNCAN LINES;
47             TITLE1 "WPAFB 14-DAY PERCHLORATE K0799 - hTg, T3 AND TSH DATA";
48             TITLE2 "PROC GLM - STEPDOWN ANOVAS BY SEX - MAIN EFFECT OF TRT";
49
50     *STEPDOWN ANOVAS - FOR rT3 and T4;
51     * THERE WAS NO GENDER X TRT INTERACTION SO TWO APPROACHES WERE TAKEN TO RUN;
52     * THE MEAN CONTRASTS AS RECOMMENDED BY THE PEER REVIEW AND CONSULTATION WITH;
53     * ALLAN MARCUS;
54
55     * THE APPROACH RECOMMENDED BY THE PEER REVIEW WAS TO INCLUDE ANY SIGNIFICANT;
56     * MAIN EFFECTS IN THE STEPDOWN ANOVAS - THIS IS THE 'LIBERAL' APPROACH;
57     * THE APPROACH RECOMMENDED BY CONSULTATION WITH ALLAN MARCUS WAS TO CONTRAST;
58     * THE LIBERAL APPROACH WITH A MORE 'CONSERVATIVE' APPROACH IN WHICH ALL;
59     * MEAN CONTRASTS ARE DONE WITH THE FIT TO THE FULL MODEL WHICH WILL MAXIMIZE;

```

```

60      * THE LIKELIHOOD OF DETECTING A DIFFERENCE BETWEEN MEANS;
61
62      * FOR T4 THERE WERE HIGHLY SIGNIFICANT MAIN EFFECTS OF TREATMENT AND SEX;
63

```

NOTE: The PROCEDURE GLM printed pages 15-28.

13 The SAS System

12:37 Saturday, September 22, 2001

```

63      PROC SORT; BY TRT SEX;
```

NOTE: The data set WORK.RAW has 96 observations and 10 variables.

```

64      PROC GLM;
65          CLASSES TRT SEX;
66          MODEL T4 = TRT|SEX;
67          MEANS TRT/DUNCAN LINE;
68          TITLE1 "WPAFB 90-DAY PERCHLORATE - T4 DATA";
69          TITLE2 "PROC GLM - MAIN EFFECT OF TRT - CONSERVATIVE APPROACH";
70

```

NOTE: Means from the MEANS statement are not adjusted for other terms in the model. For adjusted means, use the LSMEANS statement.  
 NOTE: The PROCEDURE GLM printed pages 29-31.

```

71      PROC GLM;
72          CLASSES TRT SEX;
73          MODEL T4 = TRT SEX;
74          MEANS TRT/DUNCAN LINE;
75          TITLE1 "WPAFB 90-DAY PERCHLORATE - T4 DATA";
76          TITLE2 "PROC GLM - MAIN EFFECT OF TRT - LIBERAL APPROACH";
77
78
79      * FOR rT3 THERE WAS ONLY A MAIN EFFECT OF TREATMENT;
80

```

NOTE: Means from the MEANS statement are not adjusted for other terms in the model. For adjusted means, use the LSMEANS statement.  
 NOTE: The PROCEDURE GLM printed pages 32-34.

```

80      PROC SORT; BY TRT;
```

NOTE: Input data set is already sorted, no sorting done.

```

81      PROC GLM;
82          CLASSES TRT;
83          MODEL rT3 = TRT;
84          MEANS TRT/DUNCAN LINE;
85          TITLE1 "WPAFB 90-DAY PERCHLORATE - rT3 DATA";
86          TITLE2 "PROC GLM - MAIN EFFECT OF TRT";
87
88
89      ENDSAS;

```

NOTE: The PROCEDURE GLM printed pages 35-37.

NOTE: SAS Institute Inc., SAS Campus Drive, Cary, NC USA 27513-2414

1 The SAS System

12:37 Saturday, September 22, 2001 1

OBS	WPAFB	ANIM	DOSE	SEX	HTG	RT3	T4	T3	TSH	TRT
1	68_Conto	68	0	F	0.69	7.87	4.49	124.33	10.92	1----CONTROL
2	71_Conto	71	0	F	0.68	8.26	4.50	138.36	10.71	1----CONTROL
3	86_Conto	86	0	F	0.80	8.27	5.36	127.89	12.01	1----CONTROL
4	90_Conto	90	0	F	0.67	8.12	5.36	133.14	11.40	1----CONTROL
5	95_Conto	95	0	F	0.65	8.06	4.94	134.17	10.96	1----CONTROL
6	100_Contr	100	0	F	0.70	7.77	5.33	113.17	11.49	1----CONTROL
7	51_1.25mg	51	1.25	F	0.92	8.87	4.41	93.91	11.96	2---1.25_mg/L
8	55_1.25mg	55	1.25	F	0.81	8.81	4.37	75.70	11.71	2---1.25_mg/L
9	58_1.25mg	58	1.25	F	0.97	8.75	4.47	84.17	14.74	2---1.25_mg/L
10	67_1.25mg	67	1.25	F	1.00	8.37	4.37	85.04	13.42	2---1.25_mg/L
11	73_1.25mg	73	1.25	F	0.96	8.91	4.13	86.66	13.68	2---1.25_mg/L
12	84_1.25mg	84	1.25	F	0.93	8.49	4.69	82.11	12.81	2---1.25_mg/L
13	53_5mg/L	53	5	F	1.12	8.73	4.19	83.60	13.58	3---5.0_mg/L
14	56_5mg/L	56	5	F	0.99	9.09	4.13	79.01	13.72	3---5.0_mg/L
15	63_5mg/L	63	5	F	1.13	9.17	4.16	81.13	14.33	3---5.0_mg/L
16	69_5mg/L	69	5	F	1.18	9.03	4.05	82.39	15.38	3---5.0_mg/L
17	88_5mg/L	88	5	F	1.00	8.85	4.16	96.90	14.59	3---5.0_mg/L
18	91_5mg/L	91	5	F	1.17	8.89	4.03	81.41	15.91	3---5.0_mg/L
19	60_12.5mg	60	12.5	F	1.19	9.41	3.75	94.00	15.45	4---12.5_mg/L
20	66_12.5mg	66	12.5	F	1.35	9.75	3.84	79.42	12.54	4---12.5_mg/L
21	70_12.5mg	70	12.5	F	1.43	9.65	4.11	76.16	16.42	4---12.5_mg/L
22	77_12.5mg	77	12.5	F	1.27	9.13	3.97	77.21	15.93	4---12.5_mg/L
23	92_12.5mg	92	12.5	F	1.30	9.58	4.11	78.67	16.43	4---12.5_mg/L
24	99_12.5mg	99	12.5	F	1.41	8.45	3.92	78.61	15.37	4---12.5_mg/L
25	59_25mg/L	59	25	F	1.26	11.87	3.75	73.91	17.17	5---25.0_mg/L
26	64_25mg/L	64	25	F	1.47	10.28	3.96	85.00	17.21	5---25.0_mg/L
27	76_25mg/L	76	25	F	1.40	8.74	3.80	73.47	17.33	5---25.0_mg/L
28	80_25mg/L	80	25	F	1.57	8.62	3.75	74.16	17.55	5---25.0_mg/L
29	87_25mg/L	87	25	F	1.45	9.55	4.11	88.61	16.77	5---25.0_mg/L
30	94_25mg/L	94	25	F	1.41	10.67	3.76	80.65	18.29	5---25.0_mg/L
31	52_50mg/L	52	50	F	1.32	11.28	3.78	72.41	18.59	6---50.0_mg/L
32	57_50mg/L	57	50	F	1.52	11.22	3.90	69.97	18.02	6---50.0_mg/L
33	61_50mg/L	61	50	F	1.61	8.87	3.60	68.61	19.61	6---50.0_mg/L
34	62_50mg/L	62	50	F	1.62	9.18	3.77	72.37	18.62	6---50.0_mg/L
35	85_50mg/L	85	50	F	1.36	10.84	3.51	72.10	20.35	6---50.0_mg/L
36	96_50mg/L	96	50	F	1.52	11.85	3.86	75.70	20.34	6---50.0_mg/L
37	65_125mg/	65	125	F	1.86	11.11	2.97	73.30	21.47	7---125.0_mg/L
38	78_125mg/	78	125	F	1.90	9.00	3.49	69.55	26.62	7---125.0_mg/L
39	79_125mg/	79	125	F	1.94	11.37	3.43	69.20	22.87	7---125.0_mg/L
40	81_125mg/	81	125	F	1.62	10.89	3.44	68.43	20.03	7---125.0_mg/L
41	82_125mg/	82	125	F	1.90	11.39	2.84	68.08	22.95	7---125.0_mg/L
42	93_125mg/	93	125	F	2.11	10.68	3.32	62.72	23.49	7---125.0_mg/L
43	54_250mg/	54	250	F	2.48	10.95	2.48	63.80	31.15	8---250.0_mg/L
44	72_250mg/	72	250	F	2.31	12.33	3.10	68.32	30.31	8---250.0_mg/L
45	74_250mg/	74	250	F	2.34	9.16	3.05	67.39	27.48	8---250.0_mg/L
46	75_250mg/	75	250	F	2.26	11.00	2.86	68.08	29.91	8---250.0_mg/L
47	83_250mg/	83	250	F	2.18	10.67	3.29	60.61	30.22	8---250.0_mg/L
48	89_250mg/	89	250	F	2.36	9.87	2.75	70.21	30.48	8---250.0_mg/L
49	11_Conto	11	0	M	0.87	7.80	5.19	139.85	14.24	1----CONTROL
50	15_Conto	15	0	M	0.92	7.80	5.12	141.54	13.76	1----CONTROL
51	24_Conto	24	0	M	0.81	8.16	5.16	136.13	14.68	1----CONTROL
52	39_Conto	39	0	M	0.89	8.34	4.98	110.68	13.88	1----CONTROL
53	44_Conto	44	0	M	0.85	8.32	5.44	129.32	16.69	1----CONTROL
54	47_Conto	47	0	M	0.73	8.98	4.85	139.67	13.59	1----CONTROL
55	1_1.25mg/	1	1.25	M	1.22	8.22	4.86	132.68	14.87	2---1.25_mg/L

1	56	12_1.25mg	12	1.25	M	1.21 The SAS System	8.23	4.79	127.29	15.03 12:37 Saturday, September 22, 2001	2---1.25 mg/L
	OBS	WPAFB	ANIM	DOSE	SEX	HTG	RT3	T4	T3	TSH	TRT
	57	14_1.25mg	14	1.25	M	1.35	8.23	4.83	137.89	12.32	2---1.25 mg/L
	58	19_1.25mg	19	1.25	M	1.14	8.67	4.73	126.69	15.85	2---1.25 mg/L
	59	25_1.25mg	25	1.25	M	1.27	8.80	4.70	106.41	16.70	2---1.25 mg/L
	60	27_1.25m	27	1.25	M	1.16	9.54	4.91	113.15	15.35	2---1.25 mg/L
	61	9_5mg/L	9	5	M	1.24	8.48	4.57	110.39	17.35	3----5.0 mg/L
	62	13_5mg/L	13	5	M	1.12	8.65	4.67	114.24	16.45	3----5.0 mg/L
	63	21_5mg/L	21	5	M	1.41	10.11	4.56	106.09	16.83	3----5.0 mg/L
	64	29_5mg/L	29	5	M	1.19	8.58	4.78	95.82	16.53	3----5.0 mg/L
	65	42_5mg/L	42	5	M	1.27	9.16	4.66	100.78	16.57	3----5.0 mg/L
	66	48_5mg/L	48	5	M	1.07	8.65	4.73	106.68	17.77	3----5.0 mg/L
	67	17_12.5m	17	12.5	M	1.28	9.17	4.35	99.33	22.88	4---12.5 mg/L
	68	20_12.5mg	20	12.5	M	1.19	9.03	4.34	96.77	21.74	4---12.5 mg/L
	69	26_12.5mg	26	12.5	M	1.18	9.04	3.92	85.19	18.79	4---12.5 mg/L
	70	38_12.5mg	38	12.5	M	1.16	9.11	4.53	98.02	18.45	4---12.5 mg/L
	71	41_12.5mg	41	12.5	M	1.30	9.25	4.29	81.90	19.92	4---12.5 mg/L
	72	45_12.5mg	45	12.5	M	1.28	9.03	4.49	81.55	19.72	4---12.5 mg/L
	73	4_25mg/L	4	25	M	1.27	9.57	4.06	85.83	32.66	5---25.0 mg/L
	74	7_25mg/L	7	25	M	1.36	10.07	4.26	70.56	28.76	5---25.0 mg/L
	75	16_25mg/L	16	25	M	1.42	9.24	4.16	77.17	30.41	5---25.0 mg/L
	76	30_25mg/L	30	25	M	1.45	9.18	4.25	76.22	31.18	5---25.0 mg/L
	77	36_25mg/L	36	25	M	1.43	9.36	4.23	68.55	25.57	5---25.0 mg/L
	78	43_25mg/L	43	25	M	1.55	10.31	4.18	74.16	32.82	5---25.0 mg/L
	79	6_50mg/L	6	50	M	1.42	9.57	3.99	75.99	32.94	6---50.0 mg/L
	80	8_50mg/L	8	50	M	1.51	9.25	4.20	70.02	25.18	6---50.0 mg/L
	81	33_50mg/L	33	50	M	1.35	10.76	3.93	68.79	32.37	6---50.0 mg/L
	82	34_50mg/L	34	50	M	1.60	9.51	4.08	65.96	32.52	6---50.0 mg/L
	83	40_50mg/L	40	50	M	1.58	9.33	4.39	64.02	32.26	6---50.0 mg/L
	84	46_50mg/L	46	50	M	1.60	9.66	3.90	79.37	31.60	6---50.0 mg/L
	85	2_125mg/L	2	125	M	1.85	10.64	3.32	70.73	28.46	7--125.0 mg/L
	86	5_125mg/L	5	125	M	1.80	10.88	3.64	71.03	33.88	7--125.0 mg/L
	87	28_125mg/	28	125	M	1.90	11.45	3.24	64.31	37.13	7--125.0 mg/L
	88	31_125mg/	31	125	M	1.83	12.76	3.70	61.86	33.17	7--125.0 mg/L
	89	32_125mg/	32	125	M	1.76	10.66	3.10	65.23	34.93	7--125.0 mg/L
	90	35_125mg/	35	125	M	1.55	10.85	3.57	65.62	36.19	7--125.0 mg/L
	91	3_250mg/L	3	250	M	1.98	10.22	2.89	64.50	36.37	8--250.0 mg/L
	92	10_250mg/	10	250	M	2.06	11.10	2.69	69.31	33.38	8--250.0 mg/L
	93	18_250mg/	18	250	M	2.04	10.78	2.77	61.90	43.44	8--250.0 mg/L
	94	22_250mg/	22	250	M	2.05	10.72	3.19	59.78	37.43	8--250.0 mg/L
	95	23_250mg/	23	250	M	2.44	13.18	3.26	66.30	38.25	8--250.0 mg/L
	96	37_250mg/	37	250	M	2.46	10.43	2.96	73.82	35.79	8--250.0 mg/L

The SAS System

12:37 Saturday, September 22, 2001 3

----- TRT=1 ----- CONTROL SEX=F -----

Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
HTG	6	0.6983333	0.0215123	0.6500000	0.8000000	0.0526941	0.0027767	7.5456925
RT3	6	8.0583333	0.0832433	7.7700000	8.2700000	0.2039036	0.0415767	2.5303442
T3	6	128.5100000	3.6681848	113.1700000	138.3600000	8.9851811	80.7334800	6.9918147
T4	6	4.9966667	0.1714384	4.4900000	5.3600000	0.4199365	0.1763467	8.4043330
TSH	6	11.2483333	0.1951310	10.7100000	12.0100000	0.4779714	0.2284567	4.2492643

-----  
TRT=1----CONTROL SEX=M-----

Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
HTG	6	0.8450000	0.0275379	0.7300000	0.9200000	0.0674537	0.0045500	7.9826849
RT3	6	8.2333333	0.1786368	7.8000000	8.9800000	0.4375690	0.1914667	5.3146038
T3	6	132.8650000	4.7810576	110.6800000	141.5400000	11.7111515	137.1510700	8.8143240
T4	6	5.1233333	0.0819214	4.8500000	5.4400000	0.2006656	0.0402667	3.9166993
TSH	6	14.4733333	0.4708833	13.5900000	16.6900000	1.1534239	1.3303867	7.9693037

-----  
TRT=2---1.25\_mg/L SEX=F-----

Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
HTG	6	0.9316667	0.0270082	0.8100000	1.0000000	0.0661564	0.0043767	7.1008637
RT3	6	8.7000000	0.0895545	8.3700000	8.9100000	0.2193627	0.0481200	2.5214105
T3	6	84.5983333	2.4269891	75.7000000	93.9100000	5.9448849	35.3416567	7.0271892
T4	6	4.4066667	0.0738316	4.1300000	4.6900000	0.1808498	0.0327067	4.1040056
TSH	6	13.0533333	0.4630023	11.7100000	14.7400000	1.1341193	1.2862267	8.6883504

-----  
TRT=2---1.25\_mg/L SEX=M-----

Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
HTG	6	1.2250000	0.0312783	1.1400000	1.3500000	0.0766159	0.0058700	6.2543612
RT3	6	8.6150000	0.2117664	8.2200000	9.5400000	0.5187196	0.2690700	6.0211210
T3	6	124.0183333	4.8766904	106.4100000	137.8900000	11.9454032	142.6926567	9.6319656
T4	6	4.8033333	0.0324208	4.7000000	4.9100000	0.0794145	0.0063067	1.6533211
TSH	6	15.0200000	0.6036776	12.3200000	16.7000000	1.4787021	2.1865600	9.8448877

1 The SAS System 12:37 Saturday, September 22, 2001 4

-----  
TRT=3---5.0\_mg/L SEX=F-----

Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
HTG	6	1.0983333	0.0340016	0.9900000	1.1800000	0.0832867	0.0069367	7.5830034
RT3	6	8.9600000	0.0672805	8.7300000	9.1700000	0.1648029	0.0271600	1.8393182
T3	6	84.0733333	2.6392861	79.0100000	96.9000000	6.4649042	41.7949867	7.6896014
T4	6	4.1200000	0.0265832	4.0300000	4.1900000	0.0651153	0.0042400	1.5804680
TSH	6	14.5850000	0.3746532	13.5800000	15.9100000	0.9177091	0.8421900	6.2921433

-----  
TRT=3---5.0\_mg/L SEX=M-----

Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
HTG	6	1.2166667	0.0491031	1.0700000	1.4100000	0.1202775	0.0144667	9.8858184

RT3	6	8.9383333	0.2534221	8.4800000	10.1100000	0.6207549	0.3853367	6.9448620
T3	6	105.6666667	2.6947748	95.8200000	114.2400000	6.6008232	43.5708667	6.2468358
T4	6	4.6616667	0.0353475	4.5600000	4.7800000	0.0865833	0.0074967	1.8573463
TSH	6	16.9166667	0.2168666	16.4500000	17.7700000	0.5312124	0.2821867	3.1401721

----- TRT=4---12.5\_mg/L SEX=F -----

Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
HTG	6	1.3250000	0.0368556	1.1900000	1.4300000	0.0902774	0.0081500	6.8133849
RT3	6	9.3283333	0.1968149	8.4500000	9.7500000	0.4820961	0.2324167	5.1680842
T3	6	80.6783333	2.7068203	76.1600000	94.0000000	6.6303285	43.9612567	8.2182270
T4	6	3.9500000	0.0590480	3.7500000	4.1100000	0.1446375	0.0209200	3.6617083
TSH	6	15.3566667	0.5931254	12.5400000	16.4300000	1.4528547	2.1107867	9.4607423

----- TRT=4---12.5\_mg/L SEX=M -----

Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
HTG	6	1.2316667	0.0250887	1.1600000	1.3000000	0.0614546	0.0037767	4.9895472
RT3	6	9.1050000	0.0368556	9.0300000	9.2500000	0.0902774	0.0081500	0.9915140
T3	6	90.4600000	3.4451957	81.5500000	99.3300000	8.4389715	71.2162400	9.3289537
T4	6	4.3200000	0.0885438	3.9200000	4.5300000	0.2168871	0.0470400	5.0205340
TSH	6	20.2500000	0.7047080	18.4500000	22.8800000	1.7261750	2.9796800	8.5243208

1 The SAS System 12:37 Saturday, September 22, 2001 5

----- TRT=5---25.0\_mg/L SEX=F -----

Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
HTG	6	1.4266667	0.0415264	1.2600000	1.5700000	0.1017186	0.0103467	7.1298060
RT3	6	9.9550000	0.5068382	8.6200000	11.8700000	1.2414951	1.5413100	12.4710705
T3	6	79.3000000	2.6485795	73.4700000	88.6100000	6.4876683	42.0898400	8.1811706
T4	6	3.8550000	0.0605943	3.7500000	4.1100000	0.1484251	0.0220300	3.8501962
TSH	6	17.3866667	0.2085133	16.7700000	18.2900000	0.5107511	0.2608667	2.9376021

----- TRT=5---25.0\_mg/L SEX=M -----

Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
HTG	6	1.4133333	0.0381809	1.2700000	1.5500000	0.0935236	0.0087467	6.6172369
RT3	6	9.6216667	0.1903228	9.1800000	10.3100000	0.4661938	0.2173367	4.8452500
T3	6	75.4150000	2.4797483	68.5500000	85.8300000	6.0741180	36.8949100	8.0542572
T4	6	4.1900000	0.0305505	4.0600000	4.2600000	0.0748331	0.0056000	1.7859940
TSH	6	30.2333333	1.1169054	25.5700000	32.8200000	2.7358484	7.4848667	9.0491128

----- TRT=6---50.0\_mg/L SEX=F -----

Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
HTG	6	1.4916667	0.0512781	1.3200000	1.6200000	0.1256052	0.0157767	8.4204604
RT3	6	10.5400000	0.4984844	8.8700000	11.8500000	1.2210324	1.4909200	11.5847472
T3	6	71.8600000	0.9916384	68.6100000	75.7000000	2.4290080	5.9000800	3.3801949
T4	6	3.7366667	0.0618960	3.5100000	3.9000000	0.1516135	0.0229867	4.0574543
TSH	6	19.2550000	0.4030281	18.0200000	20.3500000	0.9872132	0.9745900	5.1270488

----- TRT=6---50.0\_mg/L SEX=M -----

Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
HTG	6	1.5100000	0.0427395	1.3500000	1.6000000	0.1046900	0.0109600	6.9331138
RT3	6	9.6800000	0.2247369	9.2500000	10.7600000	0.5504907	0.3030400	5.6868873
T3	6	70.6916667	2.4107612	64.0200000	79.3700000	5.9051348	34.8706167	8.3533676
T4	6	4.0816667	0.0760446	3.9000000	4.3900000	0.1862704	0.0346967	4.5635871
TSH	6	31.1450000	1.2061613	25.1800000	32.9400000	2.9544796	8.7289500	9.4862085

1

The SAS System

12:37 Saturday, September 22, 2001 6

----- TRT=7--125.0\_mg/L SEX=F -----

Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
HTG	6	1.8883333	0.0645196	1.6200000	2.1100000	0.1580401	0.0249767	8.3692893
RT3	6	10.7400000	0.3656045	9.0000000	11.3900000	0.8955445	0.8020000	8.3384034
T3	6	68.5466667	1.3929481	62.7200000	73.3000000	3.4120121	11.6418267	4.9776485
T4	6	3.2483333	0.1121730	2.8400000	3.4900000	0.2747666	0.0754967	8.4586937
TSH	6	22.9050000	0.9031713	20.0300000	26.6200000	2.2123087	4.8943100	9.6586280

----- TRT=7--125.0\_mg/L SEX=M -----

Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
HTG	6	1.7816667	0.0501609	1.5500000	1.9000000	0.1228685	0.0150967	6.8962672
RT3	6	11.2066667	0.3329631	10.6400000	12.7600000	0.8155898	0.6651867	7.2777195
T3	6	66.4633333	1.4957577	61.8600000	71.0300000	3.6638432	13.4237467	5.5125781
T4	6	3.4283333	0.0989416	3.1000000	3.7000000	0.2423565	0.0587367	7.0692218
TSH	6	33.9600000	1.2495759	28.4600000	37.1300000	3.0608234	9.3686400	9.0130254

----- TRT=8--250.0\_mg/L SEX=F -----

Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
HTG	6	2.3216667	0.0411839	2.1800000	2.4800000	0.1008795	0.0101767	4.3451313
RT3	6	10.6633333	0.4420684	9.1600000	12.3300000	1.0828419	1.1725467	10.1548166
T3	6	66.4016667	1.4409382	60.6100000	70.2100000	3.5295632	12.4578167	5.3154739
T4	6	2.9216667	0.1172296	2.4800000	3.2900000	0.2871527	0.0824567	9.8283864
TSH	6	29.9250000	0.5171122	27.4800000	31.1500000	1.2666610	1.6044300	4.2327852

-----  
TRT=8--250.0\_mg/L SEX=M-----

Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
HTG	6	2.1716667	0.0887850	1.9800000	2.4600000	0.2174780	0.0472967	10.0143347
RT3	6	11.0716667	0.4393815	10.2200000	13.1800000	1.0762605	1.1583367	9.7208535
T3	6	65.9350000	2.0810378	59.7800000	73.8200000	5.0974808	25.9843100	7.7310696
T4	6	2.9600000	0.0925203	2.6900000	3.2600000	0.2266274	0.0513600	7.6563327
TSH	6	37.4433333	1.3784911	33.3800000	43.4400000	3.3765999	11.4014267	9.0178934

1 The SAS System 12:37 Saturday, September 22, 2001 7

-----  
TRT=1----CONTROL-----

Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
HTG	12	0.7716667	0.0276842	0.6500000	0.9200000	0.0959008	0.0091970	12.4277537
RT3	12	8.1458333	0.0975880	7.7700000	8.9800000	0.3380548	0.1142811	4.1500336
T3	12	130.6875000	2.9469049	110.6800000	141.5400000	10.2083781	104.2109841	7.8112889
T4	12	5.0600000	0.0925727	4.4900000	5.4400000	0.3206811	0.1028364	6.3375710
TSH	12	12.8608333	0.5435301	10.7100000	16.6900000	1.8828434	3.5450992	14.6401352

-----  
TRT=2---1.25\_mg/L-----

Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
HTG	12	1.0783333	0.0484116	0.8100000	1.3500000	0.1677028	0.0281242	15.5520408
RT3	12	8.6575000	0.1103584	8.2200000	9.5400000	0.3822927	0.1461477	4.4157404
T3	12	104.3083333	6.4854036	75.7000000	137.8900000	22.4660972	504.7255242	21.5381614
T4	12	4.6050000	0.0710900	4.1300000	4.9100000	0.2462630	0.0606455	5.3477303
TSH	12	14.0366667	0.4684538	11.7100000	16.7000000	1.6227717	2.6333879	11.5609475

-----  
TRT=3---5.0\_mg/L-----

Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
HTG	12	1.1575000	0.0336003	0.9900000	1.4100000	0.1163947	0.0135477	10.0556980
RT3	12	8.9491667	0.1250422	8.4800000	10.1100000	0.4331588	0.1876265	4.8402134
T3	12	94.8700000	3.7189578	79.0100000	114.2400000	12.8828477	165.9677636	13.5794747
T4	12	4.3908333	0.0843375	4.0300000	4.7800000	0.2921537	0.0853538	6.6537189
TSH	12	15.7508333	0.4076159	13.5800000	17.7700000	1.4120228	1.9938083	8.9647497

-----  
TRT=4---12.5\_mg/L-----

Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
HTG	12	1.2783333	0.0254901	1.1600000	1.4300000	0.0883005	0.0077970	6.9074669

RT3	12	9.2166667	0.1012223	8.4500000	9.7500000	0.3506444	0.1229515	3.8044603
T3	12	85.5691667	2.5568246	76.1600000	99.3300000	8.8571003	78.4482265	10.3508082
T4	12	4.1350000	0.0754030	3.7500000	4.5300000	0.2612035	0.0682273	6.3168926
TSH	12	17.8033333	0.8584979	12.5400000	22.8800000	2.9739240	8.8442242	16.7043103

1 The SAS System 12:37 Saturday, September 22, 2001 8

-----  
TRT=5---25.0\_mg/L -----

Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
HTG	12	1.4200000	0.0269680	1.2600000	1.5700000	0.0934199	0.0087273	6.5788643
RT3	12	9.7883333	0.2629461	8.6200000	11.8700000	0.9108720	0.8296879	9.3056909
T3	12	77.3575000	1.8261639	68.5500000	88.6100000	6.3260172	40.0184932	8.1776391
T4	12	4.0225000	0.0599763	3.7500000	4.2600000	0.2077641	0.0431659	5.1650484
TSH	12	23.8100000	2.0110287	16.7700000	32.8200000	6.9664077	48.5308364	29.2583272

-----  
TRT=6---50.0\_mg/L -----

Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
HTG	12	1.5008333	0.0319436	1.3200000	1.6200000	0.1106558	0.0122447	7.3729545
RT3	12	10.1100000	0.2911394	8.8700000	11.8500000	1.0085363	1.0171455	9.9756310
T3	12	71.2758333	1.2551364	64.0200000	79.3700000	4.3479200	18.9044083	6.1001321
T4	12	3.9091667	0.0699292	3.5100000	4.3900000	0.2422417	0.0586811	6.1967616
TSH	12	25.2000000	1.8922369	18.0200000	32.9400000	6.5549010	42.9667273	26.0115120

-----  
TRT=7---125.0\_mg/L -----

Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
HTG	12	1.8350000	0.0421487	1.5500000	2.1100000	0.1460075	0.0213182	7.9568105
RT3	12	10.9733333	0.2460178	9.0000000	12.7600000	0.8522306	0.7262970	7.7663784
T3	12	67.5050000	1.0237657	61.8600000	73.3000000	3.5464284	12.5771545	5.2535789
T4	12	3.3383333	0.0762952	2.8400000	3.7000000	0.2642944	0.0698515	7.9169557
TSH	12	28.4325000	1.8214917	20.0300000	37.1300000	6.3098323	39.8139841	22.1923233

-----  
TRT=8---250.0\_mg/L -----

Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
HTG	12	2.2466667	0.0518496	1.9800000	2.4800000	0.1796124	0.0322606	7.9946162
RT3	12	10.8675000	0.3034477	9.1600000	13.1800000	1.0511736	1.1049659	9.6726348
T3	12	66.1683333	1.2087558	59.7800000	73.8200000	4.1872530	17.5330879	6.3281827
T4	12	2.9408333	0.0714298	2.4800000	3.2900000	0.2474399	0.0612265	8.4139390
TSH	12	33.6841667	1.3331590	27.4800000	43.4400000	4.6181981	21.3277538	13.7102935

1 WPAFB 14-DAY PERCHLORATE - ALL VARIABLES 12:37 Saturday, September 22, 2001 9  
PROC GLM - SEX BY TRT INTERACTIONS

General Linear Models Procedure  
Class Level Information

Class	Levels	Values
-------	--------	--------

SEX	2	F M
-----	---	-----

TRT	8	1-----CONTROL 2---1.25_mg/L 3----5.0_mg/L 4---12.5_mg/L 5---25.0_mg/L 6---50.0_mg/L 7--125.0_mg/L 8--250.0_mg/L
-----	---	--

Number of observations in data set = 96

1 WPAFB 14-DAY PERCHLORATE - ALL VARIABLES 12:37 Saturday, September 22, 2001 10  
PROC GLM - SEX BY TRT INTERACTIONS

General Linear Models Procedure

Dependent Variable: HTG

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	15	18.34449583	1.22296639	100.72	0.0001
Error	80	0.97140000	0.01214250		
Corrected Total	95	19.31589583			
	R-Square	C.V.	Root MSE		HTG Mean
	0.949710	7.809338	0.11019301		1.41104167

Source	DF	Type I SS	Mean Square	F Value	Pr > F
SEX	1	0.01706667	0.01706667	1.41	0.2393
TRT	7	17.85051250	2.55007321	210.01	0.0001
SEX*TRT	7	0.47691667	0.06813095	5.61	0.0001

Source	DF	Type III SS	Mean Square	F Value	Pr > F
SEX	1	0.01706667	0.01706667	1.41	0.2393
TRT	7	17.85051250	2.55007321	210.01	0.0001
SEX*TRT	7	0.47691667	0.06813095	5.61	0.0001

1 WPAFB 14-DAY PERCHLORATE - ALL VARIABLES 12:37 Saturday, September 22, 2001 11  
PROC GLM - SEX BY TRT INTERACTIONS

General Linear Models Procedure

Dependent Variable: RT3

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	15	92.29692917	6.15312861	11.51	0.0001
Error	80	42.76986667	0.53462333		

Corrected Total	95	135.06679583			
R-Square		C.V.	Root MSE	RT3 Mean	
0.683343		7.625554	0.73117941	9.58854167	
Source	DF	Type I SS	Mean Square	F Value	Pr > F
SEX	1	0.08401667	0.08401667	0.16	0.6928
TRT	7	88.32666250	12.61809464	23.60	0.0001
SEX*TRT	7	3.88625000	0.55517857	1.04	0.4112
Source	DF	Type III SS	Mean Square	F Value	Pr > F
SEX	1	0.08401667	0.08401667	0.16	0.6928
TRT	7	88.32666250	12.61809464	23.60	0.0001
SEX*TRT	7	3.88625000	0.55517857	1.04	0.4112
1		WPAFB 14-DAY PERCHLORATE - ALL VARIABLES PROC GLM - SEX BY TRT INTERACTIONS		12:37 Saturday, September 22, 2001	12

## General Linear Models Procedure

Dependent Variable: T3

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	15	47579.87509583	3171.99167306	65.09	0.0001
Error	80	3898.62680000	48.73283500		
Corrected Total	95	51478.50189583			
R-Square		C.V.	Root MSE	T3 Mean	
0.924267		8.003983	6.98089070	87.21770833	

Source	DF	Type I SS	Mean Square	F Value	Pr > F
SEX	1	1710.95706667	1710.95706667	35.11	0.0001
TRT	7	41112.25982917	5873.17997560	120.52	0.0001
SEX*TRT	7	4756.65820000	679.52260000	13.94	0.0001
Source	DF	Type III SS	Mean Square	F Value	Pr > F
SEX	1	1710.95706667	1710.95706667	35.11	0.0001
TRT	7	41112.25982917	5873.17997560	120.52	0.0001
SEX*TRT	7	4756.65820000	679.52260000	13.94	0.0001

1 WPAFB 14-DAY PERCHLORATE - ALL VARIABLES  
PROC GLM - SEX BY TRT INTERACTIONS 12:37 Saturday, September 22, 2001 13

## General Linear Models Procedure

Dependent Variable: T4

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	15	41.11236250	2.74082417	63.68	0.0001
Error	80	3.44343333	0.04304292		
Corrected Total	95	44.55579583			
	R-Square	C.V.	Root MSE		T4 Mean
	0.922716	5.122400	0.20746787		4.05020833
Source	DF	Type I SS	Mean Square	F Value	Pr > F
SEX	1	2.04166667	2.04166667	47.43	0.0001
TRT	7	38.50592917	5.50084702	127.80	0.0001
SEX*TRT	7	0.56476667	0.08068095	1.87	0.0847
Source	DF	Type III SS	Mean Square	F Value	Pr > F
SEX	1	2.04166667	2.04166667	47.43	0.0001
TRT	7	38.50592917	5.50084702	127.80	0.0001
SEX*TRT	7	0.56476667	0.08068095	1.87	0.0847
1	WPAFB 14-DAY PERCHLORATE - ALL VARIABLES PROC GLM - SEX BY TRT INTERACTIONS				12:37 Saturday, September 22, 2001 14
	General Linear Models Procedure				
	Dependent Variable: TSH				
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	15	6297.25712917	419.81714194	120.02	0.0001
Error	80	279.82276667	3.49778458		
Corrected Total	95	6577.07989583			
	R-Square	C.V.	Root MSE		TSH Mean
	0.957455	8.720152	1.87023650		21.44729167
Source	DF	Type I SS	Mean Square	F Value	Pr > F
SEX	1	1164.54801667	1164.54801667	332.94	0.0001
TRT	7	4710.86586250	672.98083750	192.40	0.0001
SEX*TRT	7	421.84325000	60.26332143	17.23	0.0001
Source	DF	Type III SS	Mean Square	F Value	Pr > F
SEX	1	1164.54801667	1164.54801667	332.94	0.0001
TRT	7	4710.86586250	672.98083750	192.40	0.0001
SEX*TRT	7	421.84325000	60.26332143	17.23	0.0001

1

WPAFB 14-DAY PERCHLORATE K0799 - hTg, T3 AND TSH DATA  
PROC GLM - STEPDOWN ANOVAS BY SEX - MAIN EFFECT OF TRT

15

12:37 Saturday, September 22, 2001

----- SEX=F -----

General Linear Models Procedure  
Class Level Information

Class Levels Values

TRT 8 1----CONTROL 2---1.25\_mg/L 3---5.0\_mg/L 4---12.5\_mg/L 5---25.0\_mg/L 6---50.0\_mg/L 7--125.0\_mg/L  
8--250.0\_mg/L

Number of observations in by group = 48

1

WPAFB 14-DAY PERCHLORATE K0799 - hTg, T3 AND TSH DATA  
PROC GLM - STEPDOWN ANOVAS BY SEX - MAIN EFFECT OF TRT

16

12:37 Saturday, September 22, 2001

----- SEX=F -----

## General Linear Models Procedure

Dependent Variable: HTG

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	7	11.43186458	1.63312351	156.44	0.0001
Error	40	0.41758333	0.01043958		
Corrected Total	47	11.84944792			
		R-Square	C.V.	Root MSE	HTG Mean
		0.964759	7.310129	0.10217428	1.39770833

Source	DF	Type I SS	Mean Square	F Value	Pr > F
TRT	7	11.43186458	1.63312351	156.44	0.0001
Source	DF	Type III SS	Mean Square	F Value	Pr > F
TRT	7	11.43186458	1.63312351	156.44	0.0001

1

WPAFB 14-DAY PERCHLORATE K0799 - hTg, T3 AND TSH DATA  
PROC GLM - STEPDOWN ANOVAS BY SEX - MAIN EFFECT OF TRT

17

12:37 Saturday, September 22, 2001

----- SEX=F -----

## General Linear Models Procedure

Dependent Variable: T3

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F

Model	7	16214.69963125	2316.38566161	67.65	0.0001
Error	40	1369.60471667	34.24011792		
Corrected Total	47	17584.30434792			
	R-Square	C.V.	Root MSE		T3 Mean
	0.922112	7.050343	5.85150561		82.99604167
	Source	DF	Type I SS	Mean Square	F Value
	TRT	7	16214.69963125	2316.38566161	67.65
	Source	DF	Type III SS	Mean Square	F Value
	TRT	7	16214.69963125	2316.38566161	67.65
1			WPAFB 14-DAY PERCHLORATE K0799 - hTg, T3 AND TSH DATA PROC GLM - STEPDOWN ANOVAS BY SEX - MAIN EFFECT OF TRT		0.0001
					12:37 Saturday, September 22, 2001
	<hr/>				

General Linear Models Procedure					
Dependent Variable: TSH					
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	7	1541.45789792	220.20827113	144.38	0.0001
Error	40	61.00928333	1.52523208		
Corrected Total	47	1602.46718125			
	R-Square	C.V.	Root MSE		TSH Mean
	0.961928	6.874733	1.23500287		17.96437500
	Source	DF	Type I SS	Mean Square	F Value
	TRT	7	1541.45789792	220.20827113	144.38
	Source	DF	Type III SS	Mean Square	F Value
	TRT	7	1541.45789792	220.20827113	144.38
1			WPAFB 14-DAY PERCHLORATE K0799 - hTg, T3 AND TSH DATA PROC GLM - STEPDOWN ANOVAS BY SEX - MAIN EFFECT OF TRT		0.0001
					12:37 Saturday, September 22, 2001
	<hr/>				

General Linear Models Procedure					
<hr/>					

## Duncan's Multiple Range Test for variable: HTG

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha= 0.05 df= 40 MSE= 0.01044

Number of Means	2	3	4	5	6	7	8
Critical Range	.1192	.1254	.1294	.1323	.1345	.1362	.1376

Means with the same letter are not significantly different.

Duncan Grouping	Mean	N	TRT
A	2.32167	6	8--250.0_mg/L
B	1.88833	6	7--125.0_mg/L
C	1.49167	6	6---50.0_mg/L
C	1.42667	6	5---25.0_mg/L
D	1.32500	6	4---12.5_mg/L
E	1.09833	6	3----5.0_mg/L
F	0.93167	6	2---1.25_mg/L
G	0.69833	6	1-----CONTROL

1

WPAFB 14-DAY PERCHLORATE K0799 - hTg, T3 AND TSH DATA  
PROC GLM - STEPDOWN ANOVAS BY SEX - MAIN EFFECT OF TRT

20

12:37 Saturday, September 22, 2001

----- SEX=F -----

## General Linear Models Procedure

## Duncan's Multiple Range Test for variable: T3

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha= 0.05 df= 40 MSE= 34.24012

Number of Means	2	3	4	5	6	7	8
Critical Range	6.828	7.179	7.409	7.575	7.701	7.801	7.883

Means with the same letter are not significantly different.

Duncan Grouping	Mean	N	TRT
A	128.510	6	1-----CONTROL
B	84.598	6	2---1.25_mg/L
B	84.073	6	3----5.0_mg/L

B	80.678	6	4---12.5_mg/L
B	79.300	6	5---25.0_mg/L
C	71.860	6	6---50.0_mg/L
C	68.547	6	7--125.0_mg/L
C	66.402	6	8--250.0_mg/L

1 WPAFB 14-DAY PERCHLORATE K0799 - hTg, T3 AND TSH DATA 21  
 PROC GLM - STEPDOWN ANOVAS BY SEX - MAIN EFFECT OF TRT 12:37 Saturday, September 22, 2001

-----  
 SEX=F -----

General Linear Models Procedure

Duncan's Multiple Range Test for variable: TSH

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha= 0.05 df= 40 MSE= 1.525232

Number of Means	2	3	4	5	6	7	8
Critical Range	1.441	1.515	1.564	1.599	1.625	1.647	1.664

Means with the same letter are not significantly different.

Duncan Grouping	Mean	N	TRT
A	29.9250	6	8--250.0_mg/L
B	22.9050	6	7--125.0_mg/L
C	19.2550	6	6---50.0_mg/L
D	17.3867	6	5---25.0_mg/L
E	15.3567	6	4---12.5_mg/L
E	14.5850	6	3----5.0_mg/L
F	13.0533	6	2---1.25_mg/L
G	11.2483	6	1-----CONTROL

1 WPAFB 14-DAY PERCHLORATE K0799 - hTg, T3 AND TSH DATA 22  
 PROC GLM - STEPDOWN ANOVAS BY SEX - MAIN EFFECT OF TRT 12:37 Saturday, September 22, 2001

-----  
 SEX=M -----

General Linear Models Procedure

## Class Level Information

Class Levels Values

TRT 8 1-----CONTROL 2---1.25\_mg/L 3----5.0\_mg/L 4---12.5\_mg/L 5---25.0\_mg/L 6---50.0\_mg/L 7--125.0\_mg/L  
8--250.0\_mg/L

Number of observations in by group = 48

1 WPAFB 14-DAY PERCHLORATE K0799 - hTg, T3 AND TSH DATA 23  
PROC GLM - STEPDOWN ANOVAS BY SEX - MAIN EFFECT OF TRT 12:37 Saturday, September 22, 2001

----- SEX=M -----

## General Linear Models Procedure

Dependent Variable: HTG

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	7	6.89556458	0.98508065	71.15	0.0001
Error	40	0.55381667	0.01384542		
Corrected Total	47	7.44938125			
		R-Square	C.V.	Root MSE	HTG Mean
		0.925656	8.260925	0.11766655	1.42437500

Source	DF	Type I SS	Mean Square	F Value	Pr > F
TRT	7	6.89556458	0.98508065	71.15	0.0001
Source	DF	Type III SS	Mean Square	F Value	Pr > F
TRT	7	6.89556458	0.98508065	71.15	0.0001

1 WPAFB 14-DAY PERCHLORATE K0799 - hTg, T3 AND TSH DATA  
PROC GLM - STEPDOWN ANOVAS BY SEX - MAIN EFFECT OF TRT

24 12:37 Saturday, September 22, 2001

----- SEX=M -----

## General Linear Models Procedure

Dependent Variable: T3

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	7	29654.21839792	4236.31691399	67.00	0.0001
Error	40	2529.02208333	63.22555208		
Corrected Total	47	32183.24048125			

	R-Square	C.V.	Root MSE	T3 Mean
	0.921418	8.695871	7.95144968	91.43937500
	Source	DF	Type I SS	Mean Square
	TRT	7	29654.21839792	4236.31691399
	Source	DF	Type III SS	Mean Square
	TRT	7	29654.21839792	4236.31691399
1	WPAFB 14-DAY PERCHLORATE K0799 - hTg, T3 AND TSH DATA PROC GLM - STEPDOWN ANOVAS BY SEX - MAIN EFFECT OF TRT			
	----- SEX=M -----			

## General Linear Models Procedure

Dependent Variable: TSH

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	7	3591.25121458	513.03588780	93.79	0.0001
Error	40	218.81348333	5.47033708		
Corrected Total	47	3810.06469792			
	R-Square	C.V.	Root MSE		TSH Mean
	0.942570	9.381691	2.33887517		24.93020833

Source	DF	Type I SS	Mean Square	F Value	Pr > F
TRT	7	3591.25121458	513.03588780	93.79	0.0001
Source	DF	Type III SS	Mean Square	F Value	Pr > F
TRT	7	3591.25121458	513.03588780	93.79	0.0001

1	WPAFB 14-DAY PERCHLORATE K0799 - hTg, T3 AND TSH DATA PROC GLM - STEPDOWN ANOVAS BY SEX - MAIN EFFECT OF TRT			

----- SEX=M -----

## General Linear Models Procedure

Duncan's Multiple Range Test for variable: HTG

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha= 0.05 df= 40 MSE= 0.013845

Number of Means	2	3	4	5	6	7	8
Critical Range	.1373	.1444	.1490	.1523	.1549	.1569	.1585

Means with the same letter are not significantly different.

Duncan Grouping	Mean	N	TRT
A	2.17167	6	8--250.0_mg/L
B	1.78167	6	7--125.0_mg/L
C	1.51000	6	6---50.0_mg/L
C	1.41333	6	5---25.0_mg/L
D	1.23167	6	4---12.5_mg/L
D	1.22500	6	2---1.25_mg/L
D	1.21667	6	3----5.0_mg/L
E	0.84500	6	1-----CONTROL

1

WPAFB 14-DAY PERCHLORATE K0799 - hTg, T3 AND TSH DATA  
PROC GLM - STEPDOWN ANOVAS BY SEX - MAIN EFFECT OF TRT

27  
12:37 Saturday, September 22, 2001

-----  
SEX=M -----

#### General Linear Models Procedure

##### Duncan's Multiple Range Test for variable: T3

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha= 0.05 df= 40 MSE= 63.22555

Number of Means	2	3	4	5	6	7	8
Critical Range	9.28	9.76	10.07	10.29	10.46	10.60	10.71

Means with the same letter are not significantly different.

Duncan Grouping	Mean	N	TRT
A	132.865	6	1-----CONTROL
A	124.018	6	2---1.25_mg/L
B	105.667	6	3----5.0_mg/L
C	90.460	6	4---12.5_mg/L
D	75.415	6	5---25.0_mg/L
D	70.692	6	6---50.0_mg/L

D	66.463	6 7--125.0_mg/L
D	65.935	6 8--250.0_mg/L

1

WPAFB 14-DAY PERCHLORATE K0799 - hTg, T3 AND TSH DATA  
 PROC GLM - STEPDOWN ANOVAS BY SEX - MAIN EFFECT OF TRT

28

12:37 Saturday, September 22, 2001

----- SEX=M -----

## General Linear Models Procedure

Duncan's Multiple Range Test for variable: TSH

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha= 0.05 df= 40 MSE= 5.470337

Number of Means	2	3	4	5	6	7	8
Critical Range	2.729	2.870	2.961	3.028	3.078	3.118	3.151

Means with the same letter are not significantly different.

Duncan Grouping	Mean	N	TRT
A	37.443	6	8--250.0_mg/L
B	33.960	6	7--125.0_mg/L
C	31.145	6	6---50.0_mg/L
C	30.233	6	5---25.0_mg/L
D	20.250	6	4---12.5_mg/L
E	16.917	6	3----5.0_mg/L
E	15.020	6	2---1.25_mg/L
E	14.473	6	1-----CONTROL

1

WPAFB 90-DAY PERCHLORATE - T4 DATA  
 PROC GLM - MAIN EFFECT OF TRT - CONSERVATIVE APPROACH

12:37 Saturday, September 22, 2001 29

General Linear Models Procedure  
 Class Level Information

Class	Levels	Values
-------	--------	--------

TRT	8	1-----CONTROL 2---1.25_mg/L 3----5.0_mg/L 4---12.5_mg/L 5---25.0_mg/L 6---50.0_mg/L 7--125.0_mg/L $8--250.0\_mg/L$
-----	---	---

SEX	2	F M
-----	---	-----

Number of observations in data set = 96

1                    WPAFB 90-DAY PERCHLORATE - T4 DATA                    12:37 Saturday, September 22, 2001 30  
 PROC GLM - MAIN EFFECT OF TRT - CONSERVATIVE APPROACH

## General Linear Models Procedure

Dependent Variable: T4

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	15	41.11236250	2.74082417	63.68	0.0001
Error	80	3.44343333	0.04304292		
Corrected Total	95	44.55579583			
		R-Square	C.V.	Root MSE	T4 Mean
		0.922716	5.122400	0.20746787	4.05020833
Source	DF	Type I SS	Mean Square	F Value	Pr > F
TRT	7	38.50592917	5.50084702	127.80	0.0001
SEX	1	2.04166667	2.04166667	47.43	0.0001
TRT*SEX	7	0.56476667	0.08068095	1.87	0.0847
Source	DF	Type III SS	Mean Square	F Value	Pr > F
TRT	7	38.50592917	5.50084702	127.80	0.0001
SEX	1	2.04166667	2.04166667	47.43	0.0001
TRT*SEX	7	0.56476667	0.08068095	1.87	0.0847

1                    WPAFB 90-DAY PERCHLORATE - T4 DATA                    12:37 Saturday, September 22, 2001 31  
 PROC GLM - MAIN EFFECT OF TRT - CONSERVATIVE APPROACH

## General Linear Models Procedure

Duncan's Multiple Range Test for variable: T4

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha= 0.05 df= 80 MSE= 0.043043

Number of Means	2	3	4	5	6	7	8
Critical Range	.1686	.1774	.1832	.1874	.1907	.1934	.1956

Means with the same letter are not significantly different.

Duncan Grouping                    Mean                    N                    TRT

A                    5.06000                    12                    1----CONTROL

B	4.60500	12	2---1.25_mg/L
C	4.39083	12	3----5.0_mg/L
D	4.13500	12	4---12.5_mg/L
D	4.02250	12	5---25.0_mg/L
E	3.90917	12	6---50.0_mg/L
F	3.33833	12	7--125.0_mg/L
G	2.94083	12	8--250.0_mg/L

1 WPAFB 90-DAY PERCHLORATE - T4 DATA 12:37 Saturday, September 22, 2001 32  
 PROC GLM - MAIN EFFECT OF TRT - LIBERAL APPROACH

General Linear Models Procedure  
 Class Level Information

Class	Levels	Values
TRT	8	1----CONTROL 2---1.25_mg/L 3----5.0_mg/L 4---12.5_mg/L 5---25.0_mg/L 6---50.0_mg/L 7--125.0_mg/L 8--250.0_mg/L
SEX	2	F M

Number of observations in data set = 96

1 WPAFB 90-DAY PERCHLORATE - T4 DATA 12:37 Saturday, September 22, 2001 33  
 PROC GLM - MAIN EFFECT OF TRT - LIBERAL APPROACH

General Linear Models Procedure

Dependent Variable: T4

Source	DF.	Sum of Squares	Mean Square	F Value	Pr > F
Model	8	40.54759583	5.06844948	110.01	0.0001
Error	87	4.00820000	0.04607126		
Corrected Total	95	44.55579583			

R-Square	C.V.	Root MSE	T4 Mean
0.910041	5.299534	0.21464218	4.05020833

Source	DF	Type I SS	Mean Square	F Value	Pr > F
TRT	7	38.50592917	5.50084702	119.40	0.0001

SEX	1	2.04166667	2.04166667	44.32	0.0001
Source	DF	Type III SS	Mean Square	F Value	Pr > F
TRT	7	38.50592917	5.50084702	119.40	0.0001
SEX	1	2.04166667	2.04166667	44.32	0.0001

1 WPAFB 90-DAY PERCHLORATE - T4 DATA 12:37 Saturday, September 22, 2001 34  
 PROC GLM - MAIN EFFECT OF TRT - LIBERAL APPROACH

General Linear Models Procedure

Duncan's Multiple Range Test for variable: T4

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha= 0.05 df= 87 MSE= 0.046071

Number of Means 2 3 4 5 6 7 8  
 Critical Range .1742 .1833 .1893 .1937 .1971 .1999 .2022

Means with the same letter are not significantly different.

Duncan Grouping	Mean	N	TRT
A	5.06000	12	1----CONTROL
B	4.60500	12	2---1.25_mg/L
C	4.39083	12	3---5.0_mg/L
D	4.13500	12	4---12.5_mg/L
D	4.02250	12	5---25.0_mg/L
E	3.90917	12	6---50.0_mg/L
E	3.33833	12	7--125.0_mg/L
G	2.94083	12	8--250.0_mg/L

1 WPAFB 90-DAY PERCHLORATE - rT3 DATA 12:37 Saturday, September 22, 2001 35  
 PROC GLM - MAIN EFFECT OF TRT

General Linear Models Procedure  
 Class Level Information

Class	Levels	Values
TRT	8	1----CONTROL 2---1.25_mg/L 3---5.0_mg/L 4---12.5_mg/L 5---25.0_mg/L 6---50.0_mg/L 7--125.0_mg/L 8--250.0_mg/L

Number of observations in data set = 96

1

WPAFB 90-DAY PERCHLORATE - rT3 DATA  
PROC GLM - MAIN EFFECT OF TRT

12:37 Saturday, September 22, 2001 36

## General Linear Models Procedure

Dependent Variable: RT3

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	7	88.32666250	12.61809464	23.76	0.0001
Error	88	46.74013333	0.53113788		
Corrected Total	95	135.06679583			
		R-Square	C.V.	Root MSE	RT3 Mean
		0.653948	7.600656	0.72879207	9.58854167
Source	DF	Type I SS	Mean Square	F Value	Pr > F
TRT	7	88.32666250	12.61809464	23.76	0.0001
Source	DF	Type III SS	Mean Square	F Value	Pr > F
TRT	7	88.32666250	12.61809464	23.76	0.0001

1

WPAFB 90-DAY PERCHLORATE - rT3 DATA  
PROC GLM - MAIN EFFECT OF TRT

12:37 Saturday, September 22, 2001 37

## General Linear Models Procedure

Duncan's Multiple Range Test for variable: RT3

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha= 0.05 df= 88 MSE= 0.531138

Number of Means 2 3 4 5 6 7 8  
Critical Range .5913 .6222 .6427 .6577 .6693 .6787 .6864

Means with the same letter are not significantly different.

Duncan Grouping	Mean	N	TRT
A	10.9733	12	7--125.0_mg/L
A	10.8675	12	8--250.0_mg/L
B	10.1100	12	6---50.0_mg/L
B			

C	B	9.7883	12	5---25.0_mg/L
C	D	9.2167	12	4---12.5_mg/L
C	D	8.9492	12	3----5.0_mg/L
E	D	8.6575	12	2---1.25_mg/L
E	E	8.1458	12	1-----CONTROL

## APPENDIX 7

### Mouse 90-Day Immunotoxicity Study

Reference: Keil, D.; Warren, A.; Bullard-Dillard, R.; Jenny, M.; EuDaly, J. (1998) Effects of ammonium perchlorate on immunological, hematological, and thyroid parameters. Charleston, SC: Medical University of South Carolina, Department of Medical Laboratory Sciences; report no. DSWA01-97-1-008.

11

The SAS System

17:48 Wednesday, August 29, 2001

NOTE: Copyright (c) 1989-1996 by SAS Institute Inc., Cary, NC, USA.  
NOTE: SAS (r) Proprietary Software Release 6.12 TS020  
Licensed to US ENVIRONMENTAL PROTECTION AGENCY, Site 0019614059.  
NOTE: Running on ALPHASERVER Model 2100 5/300 Serial Number 80000000.

Welcome to the NHEERL-RTP SAS Information Delivery System.

```
1      *THIS FILE IS FOUND AT [CROfton.THYROID.perchlorate]perchlorate_mouse_TH.SAS;
2      *IT ANALYZES THE THYROID HORMONE DATA FROM THE MOUSE IMMUNOTOX PERCHLORATE STUDY;
3
4
5      *INPUT DATA INTO SAS DATASET;
6      DATA RAW; INFILE '[CROFTON.THYROID.PERCHLORATE] PERCHLORATE_MOUSE_TH';
7          INPUT DUR DAY$ LETTER$ DURATION STUDY $ TRT $ ANIM $ T4 TSH T3;
8
```

NOTE: The infile '[CROFTON.THYROID.PERCHLORATE] PERCHLORATE\_MOUSE\_TH' is:  
File=DSA21:[SAS\$USERS.CROFTON.THYROID.PERCHLORATE] PERCHLORATE\_MOUSE\_TH.DAT

NOTE: 330 records were read from the infile '[CROFTON.THYROID.PERCHLORATE] PERCHLORATE\_MOUSE\_TH'.  
The minimum record length was 82.  
The maximum record length was 85.

NOTE: The data set WORK.RAW has 330 observations and 10 variables.

```
9          PROC PRINT;
10
11         *SORT DATA BY TRT -- THEN GET MEANS;
12
```

NOTE: The PROCEDURE PRINT printed pages 1-6.

```
12         PROC SORT; BY TRT;
13
```

NOTE: The data set WORK.RAW has 330 observations and 10 variables.

```
13         PROC MEANS N MEAN STDERR MIN MAX STD VAR CV; BY TRT;
14             VAR T4 T3 TSH;
15
16         *SORT DATA BY DURATION AND TRT -- THEN GET MEANS;
17
```

NOTE: The PROCEDURE MEANS printed page 7.

```
17         PROC SORT; BY DURATION TRT;
18
```

NOTE: The data set WORK.RAW has 330 observations and 10 variables.

```
18         PROC MEANS N MEAN STDERR MIN MAX STD VAR CV; BY DURATION TRT;
19             VAR T4 T3 TSH;
20
```

21 \*SORT DATA BY STUDY, DURATION AND TRT -- THEN GET MEANS;  
 22

12 The SAS System

17:48 Wednesday, August 29, 2001

NOTE: The PROCEDURE MEANS printed pages 8-10.

22 PROC SORT; BY STUDY DURATION TRT;  
 23

NOTE: The data set WORK.RAW has 330 observations and 10 variables.

23 PROC MEANS N MEAN STDERR MIN MAX STD VAR CV; BY STUDY DURATION TRT;  
 24 VAR T4 T3 TSH;  
 25  
 26  
 27 \*RUN TWO WAY ANOVAS - DURATION TRT - FOR ALL VARIABLES;  
 28

NOTE: The PROCEDURE MEANS printed pages 11-21.

28 PROC SORT; BY DURATION TRT;  
 29

NOTE: The data set WORK.RAW has 330 observations and 10 variables.

29 PROC GLM;  
 30 CLASSES DURATION TRT;  
 31 MODEL T4 T3 TSH = DURATION|TRT;  
 32 TITLE1 "MOUSE IMMUNOTOX THYROID HORMONE DATA";  
 33 TITLE2 "PROC GLM - STUDY BY TRT INTERACTIONS";  
 34  
 35  
 36 \*STEPDOWN ANOVAS - DATA COLLAPSED ACROSS STUDY - ANOVAS AT EACH DURATION;

NOTE: The PROCEDURE GLM printed pages 22-25.

37 PROC SORT; BY DURATION TRT;

NOTE: Input data set is already sorted, no sorting done.

38 PROC GLM; BY DURATION;  
 39 CLASSES TRT;  
 40 MODEL T4 T3 TSH = TRT;  
 41 MEANS TRT/DUNCAN LINE;  
 42 TITLE1 "MOUSE IMMUNOTOX THYROID HORMONE DATA";  
 43 TITLE2 "PROC GLM - COLLAPSED ACROSS STUDIES";  
 44  
 45  
 46 ENDSAS;

NOTE: The PROCEDURE GLM printed pages 26-44.

NOTE: SAS Institute Inc., SAS Campus Drive, Cary, NC USA 27513-2414

1 The SAS System

17:48 Wednesday, August 29, 2001 1

OBS	DUR	DAY	LETTER	DURATION	STUDY	TRT	ANIM	T4	TSH	T3
-----	-----	-----	--------	----------	-------	-----	------	----	-----	----

1	120	d	B	120	B	Control	1B	3.5	6.20	.
2	120	d	B	120	B	Control	2B	4.1	7.10	.
3	120	d	B	120	B	Control	3B	3.3	7.10	.
4	120	d	B	120	B	Control	4B	2.5	8.00	.
5	120	d	B	120	B	Control	5B	3.0	6.20	.
6	120	d	B	120	B	Control	6B	2.5	8.00	.
7	120	d	B	120	B	0.1-mg/k	7B	3.1	8.00	.
8	120	d	B	120	B	0.1-mg/k	8B	3.1	7.10	.
9	120	d	B	120	B	0.1-mg/k	9B	3.5	8.00	.
10	120	d	B	120	B	0.1-mg/k	10B	2.8	8.80	.
11	120	d	B	120	B	0.1-mg/k	11B	3.5	3.40	.
12	120	d	B	120	B	0.1-mg/k	12B	3.0	6.20	.
13	120	d	B	120	B	1.0-mg/k	13B	3.1	6.20	.
14	120	d	B	120	B	1.0-mg/k	14B	3.3	5.45	.
15	120	d	B	120	B	1.0-mg/k	15B	3.7	5.45	.
16	120	d	B	120	B	1.0-mg/k	16B	3.5	10.65	.
17	120	d	B	120	B	1.0-mg/k	17B	2.8	6.20	.
18	120	d	B	120	B	1.0-mg/k	18B	3.1	5.45	.
19	120	d	B	120	B	3.0-mg/k	19B	2.7	7.10	.
20	120	d	B	120	B	3.0-mg/k	20B	2.5	8.00	.
21	120	d	B	120	B	3.0-mg/k	21B	2.5	8.80	.
22	120	d	B	120	B	3.0-mg/k	22B	2.5	3.40	.
23	120	d	B	120	B	3.0-mg/k	23B	3.3	8.80	.
24	120	d	B	120	B	3.0-mg/k	24B	2.7	9.80	.
25	120	d	B	120	B	30.0-mg/	25B	2.7	6.20	.
26	120	d	B	120	B	30.0-mg/	26B	3.5	7.10	.
27	120	d	B	120	B	30.0-mg/	27B	3.7	9.80	.
28	120	d	B	120	B	30.0-mg/	28B	3.1	5.45	.
29	120	d	B	120	B	30.0-mg/	29B	3.1	3.40	.
30	120	d	B	120	B	30.0-mg/	30B	3.5	8.80	.
31	120	d	E	120	E	Control	1	3.7	.	103.0
32	120	d	E	120	E	Control	2	3.5	.	171.0
33	120	d	E	120	E	Control	3	3.3	.	108.0
34	120	d	E	120	E	Control	4	4.1	.	136.5
35	120	d	E	120	E	Control	5	2.7	.	104.5
36	120	d	E	120	E	Control	6	3.1	.	155.8
37	120	d	E	120	E	0.1-mg/k	7	2.4	.	86.5
38	120	d	E	120	E	0.1-mg/k	8	2.8	.	131.5
39	120	d	E	120	E	0.1-mg/k	9	3.9	.	103.0
40	120	d	E	120	E	0.1-mg/k	10	3.5	.	124.5
41	120	d	E	120	E	0.1-mg/k	11	4.1	.	92.0
42	120	d	E	120	E	0.1-mg/k	12	3.5	.	151.0
43	120	d	E	120	E	1.0-mg/k	13	3.7	.	117.5
44	120	d	E	120	E	1.0-mg/k	14	2.7	.	129.0
45	120	d	E	120	E	1.0-mg/k	15	3.5	.	116.5
46	120	d	E	120	E	1.0-mg/k	16	2.7	.	134.0
47	120	d	E	120	E	1.0-mg/k	17	3.5	.	119.0
48	120	d	E	120	E	1.0-mg/k	18	3.3	.	93.0
49	120	d	E	120	E	3.0-mg/k	19	2.8	.	67.5
50	120	d	E	120	E	3.0-mg/k	20	3.1	.	105.5
51	120	d	E	120	E	3.0-mg/k	21	3.1	.	97.0
52	120	d	E	120	E	3.0-mg/k	22	3.0	.	90.0
53	120	d	E	120	E	3.0-mg/k	23	4.5	.	125.0
54	120	d	E	120	E	3.0-mg/k	24	3.1	.	112.0
55	120	d	E	120	E	30.0-mg/	25	3.3	.	108.0
56	120	d	E	120	E	30.0-mg/	26	3.1	.	97.0

1

## The SAS System

17:48 Wednesday, August 29, 2001 2

OBS	DUR	DAY	LETTER	DURATION	STUDY	TRT	ANIM	T4	TSH	T3
57	120	d	E	120	E	30.0-mg/	27	3.0	.	129.5
58	120	d	E	120	E	30.0-mg/	28	3.1	.	101.5
59	120	d	E	120	E	30.0-mg/	29	4.7	.	116.5
60	120	d	E	120	E	30.0-mg/	30	3.9	.	167.0
61	90	d	A	90	A	Control	1A	3.7	7.10	.
62	90	d	A	90	A	Control	2A	5.0	12.65	.
63	90	d	A	90	A	Control	3A	3.7	13.65	.
64	90	d	A	90	A	Control	4A	3.1	11.65	.
65	90	d	A	90	A	Control	5A	3.1	8.80	.
66	90	d	A	90	A	Control	6A	2.7	8.00	.
67	90	d	A	90	A	0.1-mg/k	7A	2.8	7.10	.
68	90	d	A	90	A	0.1-mg/k	8A	3.7	8.00	.
69	90	d	A	90	A	0.1-mg/k	9A	3.3	7.10	.
70	90	d	A	90	A	0.1-mg/k	10A	2.4	8.00	.
71	90	d	A	90	A	0.1-mg/k	11A	3.5	8.00	.
72	90	d	A	90	A	0.1-mg/k	12A	2.7	8.00	.
73	90	d	A	90	A	1.0-mg/k	13A	3.1	7.10	.
74	90	d	A	90	A	1.0-mg/k	14A	2.7	8.00	.
75	90	d	A	90	A	1.0-mg/k	15A	2.8	8.80	.
76	90	d	A	90	A	1.0-mg/k	16A	3.0	8.80	.
77	90	d	A	90	A	1.0-mg/k	17A	3.7	7.10	.
78	90	d	A	90	A	1.0-mg/k	18A	3.3	8.00	.
79	90	d	A	90	A	3.0-mg/k	19A	3.1	5.45	.
80	90	d	A	90	A	3.0-mg/k	20A	3.5	5.45	.
81	90	d	A	90	A	3.0-mg/k	21A	2.8	7.10	.
82	90	d	A	90	A	3.0-mg/k	22A	2.5	8.00	.
83	90	d	A	90	A	3.0-mg/k	23A	2.8	7.10	.
84	90	d	A	90	A	3.0-mg/k	24A	2.8	8.80	.
85	90	d	A	90	A	30.0-mg/	25A	1.8	5.45	.
86	90	d	A	90	A	30.0-mg/	26A	2.1	11.65	.
87	90	d	A	90	A	30.0-mg/	27A	3.7	8.00	.
88	90	d	A	90	A	30.0-mg/	28A	2.1	8.80	.
89	90	d	A	90	A	30.0-mg/	29A	2.8	7.10	.
90	90	d	A	90	A	30.0-mg/	30A	2.8	9.80	.
91	90	d	A	90	D	Control	1D	3.0	7.10	.
92	90	d	A	90	D	Control	2D	4.1	10.65	.
93	90	d	A	90	D	Control	3D	3.3	8.80	.
94	90	d	A	90	D	Control	4D	4.3	10.65	.
95	90	d	A	90	D	Control	5D	3.7	.	.
96	90	d	A	90	D	Control	6D	3.5	.	.
97	90	d	A	90	D	0.1-mg/k	7D	2.8	8.00	.
98	90	d	A	90	D	0.1-mg/k	8D	3.0	10.65	.
99	90	d	A	90	D	0.1-mg/k	9D	3.9	8.00	.
100	90	d	A	90	D	0.1-mg/k	10D	2.5	7.10	.
101	90	d	A	90	D	0.1-mg/k	11D	2.5	.	.
102	90	d	A	90	D	0.1-mg/k	12D	3.1	.	.
103	90	d	A	90	D	1.0-mg/k	13D	2.4	8.00	.
104	90	d	A	90	D	1.0-mg/k	14D	.	.	.
105	90	d	A	90	D	1.0-mg/k	15D	.	.	.
106	90	d	A	90	D	1.0-mg/k	16D	2.1	9.80	.
107	90	d	A	90	D	1.0-mg/k	17D	3.0	8.80	.
108	90	d	A	90	D	1.0-mg/k	18D	2.4	6.20	.
109	90	d	A	90	D	3.0-mg/k	19D	2.7	8.80	.

110	90	d	A	90	D	3.0-mg/k	20D	3.3	9.80	.
111	90	d	A	90	D	3.0-mg/k	21D	2.5	12.65	.
112	90	d	A	90	D	3.0-mg/k	22D	2.4	7.10	.
The SAS System										
								17:48 Wednesday, August 29, 2001		3
OBS	DUR	DAY	LETTER	DURATION	STUDY	TRT	ANIM	T4	TSH	T3
113	90	d	A	90	D	3.0-mg/k	23D	2.30	10.65	.
114	90	d	A	90	D	3.0-mg/k	24D	3.10	.	.
115	90	d	A	90	D	30.0-mg/	25D	2.10	9.80	.
116	90	d	A	90	D	30.0-mg/	26D	2.50	6.20	.
117	90	d	A	90	D	30.0-mg/	27D	2.40	.	.
118	90	d	A	90	D	30.0-mg/	28D	2.50	.	.
119	90	d	A	90	D	30.0-mg/	29D	1.90	.	.
120	90	d	A	90	D	30.0-mg/	30D	2.50	.	.
121	14	d	C	14	C	Control	1C	3.30	.	.
122	14	d	C	14	C	Control	2C	4.30	.	.
123	14	d	C	14	C	Control	3C	3.70	.	.
124	14	d	C	14	C	Control	4C	3.80	.	.
125	14	d	C	14	C	Control	5C	2.80	.	.
126	14	d	C	14	C	Control	6C	3.00	.	.
127	14	d	C	14	C	0.1-mg/k	7C	2.50	.	.
128	14	d	C	14	C	0.1-mg/k	8C	3.20	.	.
129	14	d	C	14	C	0.1-mg/k	9C	2.20	.	.
130	14	d	C	14	C	0.1-mg/k	10C	3.20	.	.
131	14	d	C	14	C	0.1-mg/k	11C	3.30	.	.
132	14	d	C	14	C	0.1-mg/k	12C	3.50	.	.
133	14	d	C	14	C	1.0-mg/k	13C	2.10	.	.
134	14	d	C	14	C	1.0-mg/k	14C	3.00	.	.
135	14	d	C	14	C	1.0-mg/k	15C	3.00	.	.
136	14	d	C	14	C	1.0-mg/k	16C	3.20	.	.
137	14	d	C	14	C	1.0-mg/k	17C	2.80	.	.
138	14	d	C	14	C	1.0-mg/k	18C	2.50	.	.
139	14	d	C	14	C	3.0-mg/k	19C	2.40	.	.
140	14	d	C	14	C	3.0-mg/k	20C	2.80	.	.
141	14	d	C	14	C	3.0-mg/k	21C	2.80	.	.
142	14	d	C	14	C	3.0-mg/k	22C	3.20	.	.
143	14	d	C	14	C	3.0-mg/k	23C	2.20	.	.
144	14	d	C	14	C	3.0-mg/k	24C	2.40	.	.
145	14	d	C	14	C	30.0-mg/	25C	2.70	.	.
146	14	d	C	14	C	30.0-mg/	26C	2.00	.	.
147	14	d	C	14	C	30.0-mg/	27C	2.50	.	.
148	14	d	C	14	C	30.0-mg/	28C	3.00	.	.
149	14	d	C	14	C	30.0-mg/	29C	2.80	.	.
150	14	d	C	14	C	30.0-mg/	30C	3.30	.	.
151	14	d	I	14	I	Control	1I	3.40	.	.
152	14	d	I	14	I	Control	2I	3.40	.	.
153	14	d	I	14	I	Control	3I	3.10	.	.
154	14	d	I	14	I	Control	4I	3.25	.	.
155	14	d	I	14	I	Control	5I	3.95	.	.
156	14	d	I	14	I	Control	6I	2.75	.	.
157	14	d	I	14	I	0.1-mg/k	7I	3.55	.	.
158	14	d	I	14	I	0.1-mg/k	8I	3.40	.	.
159	14	d	I	14	I	0.1-mg/k	9I	3.95	.	.
160	14	d	I	14	I	0.1-mg/k	10I	3.55	.	.
161	14	d	I	14	I	0.1-mg/k	11I	2.95	.	.
162	14	d	I	14	I	0.1-mg/k	12I	3.40	.	.

163	14	d	I	14	I	1.0-mg/k	13I	3.40	.	.
164	14	d	I	14	I	1.0-mg/k	14I	3.10	.	.
165	14	d	I	14	I	1.0-mg/k	15I	3.25	.	.
166	14	d	I	14	I	1.0-mg/k	16I	3.70	.	.
167	14	d	I	14	I	1.0-mg/k	17I	3.40	.	.
168	14	d	I	14	I	1.0-mg/k	18I	3.25	.	.
1					The SAS System			17:48 Wednesday, August 29, 2001		4
OBS	DUR	DAY	LETTER	DURATION	STUDY	TRT	ANIM	T4	TSH	T3
169	14	d	I	14	I	3.0-mg/k	19I	2.75	.	.
170	14	d	I	14	I	3.0-mg/k	20I	3.40	.	.
171	14	d	I	14	I	3.0-mg/k	21I	2.95	.	.
172	14	d	I	14	I	3.0-mg/k	22I	3.40	.	.
173	14	d	I	14	I	3.0-mg/k	23I	2.95	.	.
174	14	d	I	14	I	3.0-mg/k	24I	3.10	.	.
175	14	d	I	14	I	30.0-mg/	25I	3.40	.	.
176	14	d	I	14	I	30.0-mg/	26I	2.60	.	.
177	14	d	I	14	I	30.0-mg/	27I	2.15	.	.
178	14	d	I	14	I	30.0-mg/	28I	2.15	.	.
179	14	d	I	14	I	30.0-mg/	29I	3.10	.	.
180	14	d	I	14	I	30.0-mg/	30I	2.95	.	.
181	14	d	J	14	J	Control	1J	2.75	.	.
182	14	d	J	14	J	Control	2J	3.90	.	.
183	14	d	J	14	J	Control	3J	2.95	.	.
184	14	d	J	14	J	Control	4J	3.40	.	.
185	14	d	J	14	J	Control	5J	3.90	.	.
186	14	d	J	14	J	Control	6J	3.90	.	.
187	14	d	J	14	J	0.1-mg/k	7J	3.90	.	.
188	14	d	J	14	J	0.1-mg/k	8J	2.95	.	.
189	14	d	J	14	J	0.1-mg/k	9J	3.40	.	.
190	14	d	J	14	J	0.1-mg/k	10J	3.40	.	.
191	14	d	J	14	J	0.1-mg/k	11J	3.70	.	.
192	14	d	J	14	J	0.1-mg/k	12J	3.40	.	.
193	14	d	J	14	J	1.0-mg/k	13J	2.95	.	.
194	14	d	J	14	J	1.0-mg/k	14J	3.70	.	.
195	14	d	J	14	J	1.0-mg/k	15J	3.10	.	.
196	14	d	J	14	J	1.0-mg/k	16J	3.90	.	.
197	14	d	J	14	J	1.0-mg/k	17J	3.10	.	.
198	14	d	J	14	J	1.0-mg/k	18J	3.55	.	.
199	14	d	J	14	J	3.0-mg/k	19J	3.25	.	.
200	14	d	J	14	J	3.0-mg/k	20J	3.55	.	.
201	14	d	J	14	J	3.0-mg/k	21J	3.25	.	.
202	14	d	J	14	J	3.0-mg/k	22J	3.70	.	.
203	14	d	J	14	J	3.0-mg/k	23J	3.90	.	.
204	14	d	J	14	J	3.0-mg/k	24J	3.40	.	.
205	14	d	J	14	J	30.0-mg/	25J	3.25	.	.
206	14	d	J	14	J	30.0-mg/	26J	3.25	.	.
207	14	d	J	14	J	30.0-mg/	27J	3.40	.	.
208	14	d	J	14	J	30.0-mg/	28J	2.95	.	.
209	14	d	J	14	J	30.0-mg/	29J	2.95	.	.
210	14	d	J	14	J	30.0-mg/	30J	3.25	.	.
211	14	d	G	14	G	Control	1G	2.70	.	.
212	14	d	G	14	G	Control	2G	3.00	.	.
213	14	d	G	14	G	Control	3G	2.80	.	.
214	14	d	G	14	G	Control	4G	3.00	.	.
215	14	d	G	14	G	Control	5G	3.50	.	.

216	14	d	G	14	G	Control	6G	2.40	.	.
217	14	d	G	14	G	0.1-mg/k	7G	2.20	.	.
218	14	d	G	14	G	0.1-mg/k	8G	2.70	.	.
219	14	d	G	14	G	0.1-mg/k	9G	3.00	.	.
220	14	d	G	14	G	0.1-mg/k	10G	3.60	.	.
221	14	d	G	14	G	0.1-mg/k	11G	2.80	.	.
222	14	d	G	14	G	0.1-mg/k	12G	2.40	.	.
223	14	d	G	14	G	1.0-mg/k	13G	3.30	.	.
224	14	d	G	14	G	1.0-mg/k	14G	3.00	.	.

1

The SAS System

17:48 Wednesday, August 29, 2001 5

OBS	DUR	DAY	LETTER	DURATION	STUDY	TRT	ANIM	T4	TSH	T3
225	14	d	G	14	G	1.0-mg/k	15G	4.1	.	.
226	14	d	G	14	G	1.0-mg/k	16G	3.7	.	.
227	14	d	G	14	G	1.0-mg/k	17G	3.5	.	.
228	14	d	G	14	G	1.0-mg/k	18G	3.9	.	.
229	14	d	G	14	G	3.0-mg/k	19G	3.3	.	.
230	14	d	G	14	G	3.0-mg/k	20G	3.3	.	.
231	14	d	G	14	G	3.0-mg/k	21G	3.0	.	.
232	14	d	G	14	G	3.0-mg/k	22G	3.9	.	.
233	14	d	G	14	G	3.0-mg/k	23G	3.5	.	.
234	14	d	G	14	G	3.0-mg/k	24G	3.0	.	.
235	14	d	G	14	G	30.0-mg/	25G	2.8	.	.
236	14	d	G	14	G	30.0-mg/	26G	3.3	.	.
237	14	d	G	14	G	30.0-mg/	27G	3.3	.	.
238	14	d	G	14	G	30.0-mg/	28G	2.0	.	.
239	14	d	G	14	G	30.0-mg/	29G	2.8	.	.
240	14	d	G	14	G	30.0-mg/	30G	2.5	.	.
241	14	d	K	14	K	Control	1K	3.7	.	.
242	14	d	K	14	K	Control	2K	4.8	.	.
243	14	d	K	14	K	Control	3K	4.1	.	.
244	14	d	K	14	K	Control	4K	3.5	.	.
245	14	d	K	14	K	Control	5K	3.5	.	.
246	14	d	K	14	K	Control	6K	3.1	.	.
247	14	d	K	14	K	0.1-mg/k	7K	3.1	.	.
248	14	d	K	14	K	0.1-mg/k	8K	4.8	.	.
249	14	d	K	14	K	0.1-mg/k	9K	3.5	.	.
250	14	d	K	14	K	0.1-mg/k	10K	3.7	.	.
251	14	d	K	14	K	0.1-mg/k	11K	4.5	.	.
252	14	d	K	14	K	0.1-mg/k	12K	4.1	.	.
253	14	d	K	14	K	1.0-mg/k	13K	4.5	.	.
254	14	d	K	14	K	1.0-mg/k	14K	4.1	.	.
255	14	d	K	14	K	1.0-mg/k	15K	4.5	.	.
256	14	d	K	14	K	1.0-mg/k	16K	4.5	.	.
257	14	d	K	14	K	1.0-mg/k	17K	4.3	.	.
258	14	d	K	14	K	1.0-mg/k	18K	3.5	.	.
259	14	d	K	14	K	3.0-mg/k	19K	4.1	.	.
260	14	d	K	14	K	3.0-mg/k	20K	4.1	.	.
261	14	d	K	14	K	3.0-mg/k	21K	4.1	.	.
262	14	d	K	14	K	3.0-mg/k	22K	4.3	.	.
263	14	d	K	14	K	3.0-mg/k	23K	3.5	.	.
264	14	d	K	14	K	3.0-mg/k	24K	3.5	.	.
265	14	d	K	14	K	30.0-mg/	25K	2.5	.	.
266	14	d	K	14	K	30.0-mg/	26K	2.9	.	.
267	14	d	K	14	K	30.0-mg/	27K	3.3	.	.
268	14	d	K	14	K	30.0-mg/	28K	3.1	.	.

269	14	d	K	14	K	30.0-mg/	29K	3.1	.	.
270	14	d	K	14	K	30.0-mg/	30K	3.7	.	.
271	14	d	T	14	T	Control	1T	.	.	144.0
272	14	d	T	14	T	Control	2T	.	.	122.0
273	14	d	T	14	T	Control	3T	.	.	120.5
274	14	d	T	14	T	Control	4T	.	.	113.5
275	14	d	T	14	T	Control	5T	.	.	100.5
276	14	d	T	14	T	Control	6T	.	.	148.5
277	14	d	T	14	T	0.1-mg/k	7T	.	.	98.0
278	14	d	T	14	T	0.1-mg/k	8T	.	.	131.5
279	14	d	T	14	T	0.1-mg/k	9T	.	.	115.0
280	14	d	T	14	T	0.1-mg/k	10T	.	.	131.0

1

The SAS System

17:48 Wednesday, August 29, 2001 6

OBS	DUR	DAY	LETTER	DURATION	STUDY	TRT	ANIM	T4	TSH	T3
281	14	d	T	14	T	0.1-mg/k	11T	.	.	75.0
282	14	d	T	14	T	0.1-mg/k	12T	.	.	114.5
283	14	d	T	14	T	1.0-mg/k	13T	.	.	133.5
284	14	d	T	14	T	1.0-mg/k	14T	.	.	135.0
285	14	d	T	14	T	1.0-mg/k	15T	.	.	130.0
286	14	d	T	14	T	1.0-mg/k	16T	.	.	124.5
287	14	d	T	14	T	1.0-mg/k	17T	.	.	139.0
288	14	d	T	14	T	1.0-mg/k	18T	.	.	140.0
289	14	d	T	14	T	3.0-mg/k	19T	.	.	108.0
290	14	d	T	14	T	3.0-mg/k	20T	.	.	109.5
291	14	d	T	14	T	3.0-mg/k	21T	.	.	124.5
292	14	d	T	14	T	3.0-mg/k	22T	.	.	104.5
293	14	d	T	14	T	3.0-mg/k	23T	.	.	175.0
294	14	d	T	14	T	3.0-mg/k	24T	.	.	125.0
295	14	d	T	14	T	30.0-mg/	25T	.	.	100.5
296	14	d	T	14	T	30.0-mg/	26T	.	.	103.0
297	14	d	T	14	T	30.0-mg/	27T	.	.	155.5
298	14	d	T	14	T	30.0-mg/	28T	.	.	122.0
299	14	d	T	14	T	30.0-mg/	29T	.	.	108.0
300	14	d	T	14	T	30.0-mg/	30T	.	.	113.5
301	90	d	N	90	N	Control	1N	.	.	112.0
302	90	d	N	90	N	Control	2N	.	.	116.5
303	90	d	N	90	N	Control	3N	.	.	113.5
304	90	d	N	90	N	Control	4N	.	.	121.0
305	90	d	N	90	N	Control	5N	.	.	117.5
306	90	d	N	90	N	Control	6N	.	.	112.5
307	90	d	N	90	N	0.1-mg/k	7N	.	.	99.0
308	90	d	N	90	N	0.1-mg/k	8N	.	.	82.0
309	90	d	N	90	N	0.1-mg/k	9N	.	.	99.0
310	90	d	N	90	N	0.1-mg/k	10N	.	.	72.0
311	90	d	N	90	N	0.1-mg/k	11N	.	.	82.0
312	90	d	N	90	N	0.1-mg/k	12N	.	.	101.5
313	90	d	N	90	N	1.0-mg/k	13N	.	.	113.0
314	90	d	N	90	N	1.0-mg/k	14N	.	.	93.5
315	90	d	N	90	N	1.0-mg/k	15N	.	.	91.0
316	90	d	N	90	N	1.0-mg/k	16N	.	.	103.5
317	90	d	N	90	N	1.0-mg/k	17N	.	.	118.0
318	90	d	N	90	N	1.0-mg/k	18N	.	.	95.5
319	90	d	N	90	N	3.0-mg/k	19N	.	.	.
320	90	d	N	90	N	3.0-mg/k	20N	.	.	65.0
321	90	d	N	90	N	3.0-mg/k	21N	.	.	62.0

322	90	d	N	90	N	3.0-mg/k	22N	.	.	112.0
323	90	d	N	90	N	3.0-mg/k	23N	.	.	102.0
324	90	d	N	90	N	3.0-mg/k	24N	.	.	124.5
325	90	d	N	90	N	30.0-mg/	25N	.	.	72.5
326	90	d	N	90	N	30.0-mg/	26N	.	.	90.5
327	90	d	N	90	N	30.0-mg/	27N	.	.	.
328	90	d	N	90	N	30.0-mg/	28N	.	.	120.5
329	90	d	N	90	N	30.0-mg/	29N	.	.	114.0
330	90	d	N	90	N	30.0-mg/	30N	.	.	108.0

1

The SAS System

17:48 Wednesday, August 29, 2001 7

----- TRT=0.1-mg/k -----

Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
T4	54	3.2453704	0.0765507	2.2000000	4.8000000	0.5625304	0.3164404	17.3333184
T3	18	104.9444444	5.2588066	72.0000000	151.0000000	22.3112270	497.7908497	21.2600363
TSH	16	7.5906250	0.3686750	3.4000000	10.6500000	1.4746998	2.1747396	19.4279105

----- TRT=1.0-mg/k -----

Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
T4	52	3.2942308	0.0785384	2.1000000	4.5000000	0.5663483	0.3207504	17.1921253
T3	18	118.0833333	3.9260422	91.0000000	140.0000000	16.6567863	277.4485294	14.1059587
TSH	16	7.5000000	0.4032679	5.4500000	10.6500000	1.6130716	2.6020000	21.5076214

----- TRT=3.0-mg/k -----

Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
T4	54	3.1222222	0.0730640	2.2000000	4.5000000	0.5369082	0.2882704	17.1963488
T3	17	106.4117647	6.5606945	62.0000000	175.0000000	27.0504363	731.7261029	25.4205316
TSH	17	8.0470588	0.5252883	3.4000000	12.6500000	2.1658190	4.6907721	26.9144177

----- TRT=30.0-mg/ -----

Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
T4	54	2.9055556	0.0774288	1.8000000	4.7000000	0.5689834	0.3237421	19.5826036
T3	17	113.3823529	5.4262315	72.5000000	167.0000000	22.3729255	500.5477941	19.7322819
TSH	14	7.6821429	0.5984092	3.4000000	11.6500000	2.2390423	5.0133104	29.1460644

----- TRT=Control -----

Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
T4	54	3.4101852	0.0772449	2.4000000	5.0000000	0.5676316	0.3222056	16.6451838

T3	18	123.3777778	4.6511546	100.5000000	171.0000000	19.7331777	389.3983007	15.9941101
TSH	16	8.8531250	0.5783142	6.2000000	13.6500000	2.3132566	5.3511563	26.1292666

1 The SAS System 17:48 Wednesday, August 29, 2001 8

DURATION=14 TRT=0.1-mg/k

Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
T4	30	3.3283333	0.1105286	2.2000000	4.8000000	0.6053901	0.3664971	18.1889853
T3	6	110.8333333	8.7812932	75.0000000	131.5000000	21.5096877	462.6666667	19.4072371
TSH	0	.	.	.	.	.	.	.

DURATION=14 TRT=1.0-mg/k

Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
T4	30	3.4633333	0.1073166	2.1000000	4.5000000	0.5877974	0.3455057	16.9720126
T3	6	133.6666667	2.3652578	124.5000000	140.0000000	5.7936747	33.5666667	4.3344200
TSH	0	.	.	.	.	.	.	.

DURATION=14 TRT=3.0-mg/k

Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
T4	30	3.3000000	0.0966389	2.2000000	4.3000000	0.5293132	0.2801724	16.0397925
T3	6	124.4166667	10.7202431	104.5000000	175.0000000	26.2591254	689.5416667	21.1057940
TSH	0	.	.	.	.	.	.	.

DURATION=14 TRT=30.0-mg/

Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
T4	30	2.9000000	0.0807294	2.0000000	3.7000000	0.4421733	0.1955172	15.2473557
T3	6	117.0833333	8.3040318	100.5000000	155.5000000	20.3406408	413.7416667	17.3727893
TSH	0	.	.	.	.	.	.	.

DURATION=14 TRT=Control

Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
T4	30	3.3883333	0.0995878	2.4000000	4.8000000	0.5454646	0.2975316	16.0983152
T3	6	124.8333333	7.4717988	100.5000000	148.5000000	18.3020946	334.9666667	14.6612240
TSH	0	.	.	.	.	.	.	.

1 The SAS System 17:48 Wednesday, August 29, 2001 9

DURATION=90 TRT=0.1-mg/k

Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
T4	12	3.0166667	0.1424001	2.4000000	3.9000000	0.4932883	0.2433333	16.3520979
T3	6	89.2500000	4.9761933	72.0000000	101.5000000	12.1891345	148.5750000	13.6572936
TSH	10	7.9950000	0.3240756	7.1000000	10.6500000	1.0248171	1.0502500	12.8182246

----- DURATION=90 TRT=1.0-mg/k -----

Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
T4	10	2.8500000	0.1500000	2.1000000	3.7000000	0.4743416	0.2250000	16.6435666
T3	6	102.4166667	4.5229354	91.0000000	118.0000000	11.0788838	122.7416667	10.8174618
TSH	10	8.0600000	0.3330666	6.2000000	9.8000000	1.0532489	1.1093333	13.0676047

----- DURATION=90 TRT=3.0-mg/k -----

Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
T4	12	2.8166667	0.1071909	2.3000000	3.5000000	0.3713203	0.1378788	13.1829703
T3	5	93.1000000	12.6079340	62.0000000	124.5000000	28.1921975	794.8000000	30.2816300
TSH	11	8.2636364	0.6594450	5.4500000	12.6500000	2.1871318	4.7835455	26.4669413

----- DURATION=90 TRT=30.0-mg/ -----

Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
T4	12	2.4333333	0.1483921	1.8000000	3.7000000	0.5140452	0.2642424	21.1251435
T3	5	101.1000000	8.7198050	72.5000000	120.5000000	19.4980768	380.1750000	19.2859316
TSH	8	8.3500000	0.7321080	5.4500000	11.6500000	2.0707142	4.2878571	24.7989720

----- DURATION=90 TRT=Control -----

Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
T4	12	3.6000000	0.1846372	2.7000000	5.0000000	0.6396021	0.4090909	17.7667264
T3	6	115.5000000	1.4200939	112.0000000	121.0000000	3.4785054	12.1000000	3.0116930
TSH	10	9.9050000	0.7266533	7.1000000	13.6500000	2.2978795	5.2802500	23.1991868

1

The SAS System

17:48 Wednesday, August 29, 2001 10

----- DURATION=120 TRT=0.1-mg/k -----

Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
T4	12	3.2666667	0.1410638	2.4000000	4.1000000	0.4886593	0.2387879	14.9589571
T3	6	114.7500000	10.2361695	86.5000000	151.0000000	25.0733923	628.6750000	21.8504508

TSH	6	6.9166667	0.7917982	3.4000000	8.8000000	1.9395017	3.7616667	28.0409878
-----	---	-----------	-----------	-----------	-----------	-----------	-----------	------------

DURATION=120 TRT=1.0-mg/k

Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
T4	12	3.2416667	0.1047785	2.7000000	3.7000000	0.3629634	0.1317424	11.1968142
T3	6	118.1666667	5.7888782	93.0000000	134.0000000	14.1797978	201.0666667	11.9998289
TSH	6	6.5666667	0.8303279	5.4500000	10.6500000	2.0338797	4.1366667	30.9727874

DURATION=120 TRT=3.0-mg/k

Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
T4	12	2.9833333	0.1589899	2.5000000	4.5000000	0.5507571	0.3033333	18.4611303
T3	6	99.5000000	8.0890873	67.5000000	125.0000000	19.8141364	392.6000000	19.9137049
TSH	6	7.6500000	0.9265528	3.4000000	9.8000000	2.2695815	5.1510000	29.6677315

DURATION=120 TRT=30.0-mg/

Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
T4	12	3.3916667	0.1524836	2.7000000	4.7000000	0.5282188	0.2790152	15.5740201
T3	6	119.9166667	10.5304453	97.0000000	167.0000000	25.7942177	665.3416667	21.5101190
TSH	6	6.7916667	0.9457287	3.4000000	9.8000000	2.3165528	5.3664167	34.1087522

DURATION=120 TRT=Control

Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
T4	12	3.2750000	0.1576941	2.5000000	4.1000000	0.5462683	0.2984091	16.6799491
T3	6	129.8000000	11.9050409	103.0000000	171.0000000	29.1612757	850.3800000	22.4663141
TSH	6	7.1000000	0.3286335	6.2000000	8.0000000	0.8049845	0.6480000	11.3378095

1

The SAS System

17:48 Wednesday, August 29, 2001 11

STUDY=A DURATION=90 TRT=0.1-mg/k

Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
T4	6	3.0666667	0.2076322	2.4000000	3.7000000	0.5085928	0.2586667	16.5845488
T3	0	.	.	.	.	.	.	.
TSH	6	7.7000000	0.1897367	7.1000000	8.0000000	0.4647580	0.2160000	6.0358182

STUDY=A DURATION=90 TRT=1.0-mg/k

Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
T4	6	3.1000000	0.1483240	2.7000000	3.7000000	0.3633180	0.1320000	11.7199369
T3	0							
TSH	6	7.9666667	0.3105551	7.1000000	8.8000000	0.7607014	0.5786667	9.5485535

----- STUDY=A DURATION=90 TRT=3.0-mg/k -----

Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
T4	6	2.9166667	0.1400397	2.5000000	3.5000000	0.3430258	0.1176667	11.7608829
T3	0							
TSH	6	6.9833333	0.5496464	5.4500000	8.8000000	1.3463531	1.8126667	19.2795193

----- STUDY=A DURATION=90 TRT=30.0-mg/ -----

Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
T4	6	2.5500000	0.2837252	1.8000000	3.7000000	0.6949820	0.4830000	27.2541966
T3	0							
TSH	6	8.4666667	0.8795517	5.4500000	11.6500000	2.1544528	4.6416667	25.4462924

----- STUDY=A DURATION=90 TRT=Control -----

Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
T4	6	3.5500000	0.3304038	2.7000000	5.0000000	0.8093207	0.6550000	22.7977663
T3	0							
TSH	6	10.3083333	1.1007132	7.1000000	13.6500000	2.6961856	7.2694167	26.1553977

1 The SAS System 17:48 Wednesday, August 29, 2001 12

----- STUDY=B DURATION=120 TRT=0.1-mg/k -----

Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
T4	6	3.1666667	0.1145038	2.8000000	3.5000000	0.2804758	0.0786667	8.8571301
T3	0							
TSH	6	6.9166667	0.7917982	3.4000000	8.8000000	1.9395017	3.7616667	28.0409878

----- STUDY=B DURATION=120 TRT=1.0-mg/k -----

Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
T4	6	3.2500000	0.1310216	2.8000000	3.7000000	0.3209361	0.1030000	9.8749579
T3	0							
TSH	6	6.5666667	0.8303279	5.4500000	10.6500000	2.0338797	4.1366667	30.9727874

## ----- STUDY=B DURATION=120 TRT=3.0-mg/k -----

Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
T4	6	2.7000000	0.1264911	2.5000000	3.3000000	0.3098387	0.0960000	11.4755062
T3	0	.	.	.	.	.	.	.
TSH	6	7.6500000	0.9265528	3.4000000	9.8000000	2.2695815	5.1510000	29.6677315

## ----- STUDY=B DURATION=120 TRT=30.0-mg/ -----

Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
T4	6	3.2666667	0.1498147	2.7000000	3.7000000	0.3669696	0.1346667	11.2337624
T3	0	.	.	.	.	.	.	.
TSH	6	6.7916667	0.9457287	3.4000000	9.8000000	2.3165528	5.3664167	34.1087522

## ----- STUDY=B DURATION=120 TRT=Control -----

Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
T4	6	3.1500000	0.2526526	2.5000000	4.1000000	0.6188699	0.3830000	19.6466647
T3	0	.	.	.	.	.	.	.
TSH	6	7.1000000	0.3286335	6.2000000	8.0000000	0.8049845	0.6480000	11.3378095

1

The SAS System

17:48 Wednesday, August 29, 2001 13

## ----- STUDY=C DURATION=14 TRT=0.1-mg/k -----

Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
T4	6	2.9833333	0.2088327	2.2000000	3.5000000	0.5115336	0.2616667	17.1463791
T3	0	.	.	.	.	.	.	.
TSH	0	.	.	.	.	.	.	.

## ----- STUDY=C DURATION=14 TRT=1.0-mg/k -----

Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
T4	6	2.7666667	0.1646545	2.1000000	3.2000000	0.4033196	0.1626667	14.5778154
T3	0	.	.	.	.	.	.	.
TSH	0	.	.	.	.	.	.	.

## ----- STUDY=C DURATION=14 TRT=3.0-mg/k -----

Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
T4	6	2.7000000	0.1264911	2.5000000	3.3000000	0.3098387	0.0960000	11.4755062

T4	6	2.6333333	0.1498147	2.2000000	3.2000000	0.3669696	0.1346667	13.9355534
T3	0	.	.	.	.	.	.	.
TSH	0	.	.	.	.	.	.	.

----- STUDY=C DURATION=14 TRT=30.0-mg/ -----

Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
T4	6	2.7166667	0.1815060	2.0000000	3.3000000	0.4445972	0.1976667	16.3655410
T3	0	.	.	.	.	.	.	.
TSH	0	.	.	.	.	.	.	.

----- STUDY=C DURATION=14 TRT=Control -----

Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
T4	6	3.4833333	0.2271808	2.8000000	4.3000000	0.5564770	0.3096667	15.9754167
T3	0	.	.	.	.	.	.	.
TSH	0	.	.	.	.	.	.	.

1 The SAS System 17:48 Wednesday, August 29, 2001 14

----- STUDY=D DURATION=90 TRT=0.1-mg/k -----

Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
T4	6	2.9666667	0.2123938	2.5000000	3.9000000	0.5202563	0.2706667	17.5367308
T3	0	.	.	.	.	.	.	.
TSH	4	8.4375000	0.7674023	7.1000000	10.6500000	1.5348045	2.3556250	18.1902761

----- STUDY=D DURATION=90 TRT=1.0-mg/k -----

Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
T4	4	2.4750000	0.1887459	2.1000000	3.0000000	0.3774917	0.1425000	15.2521908
T3	0	.	.	.	.	.	.	.
TSH	4	8.2000000	0.7615773	6.2000000	9.8000000	1.5231546	2.3200000	18.5750564

----- STUDY=D DURATION=90 TRT=3.0-mg/k -----

Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
T4	6	2.7166667	0.1641476	2.3000000	3.3000000	0.4020779	0.1616667	14.8004148
T3	0	.	.	.	.	.	.	.
TSH	5	9.8000000	0.9256079	7.1000000	12.6500000	2.0697222	4.2837500	21.1196143

----- STUDY=D DURATION=90 TRT=30.0-mg/ -----

Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
T4	6	2.3166667	0.1046157	1.9000000	2.5000000	0.2562551	0.0656667	11.0613704
T3	0							
TSH	2	8.0000000	1.8000000	6.2000000	9.8000000	2.5455844	6.4800000	31.8198052

----- STUDY=D DURATION=90 TRT=Control -----

Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
T4	6	3.6500000	0.1995829	3.0000000	4.3000000	0.4888763	0.2390000	13.3938702
T3	0							
TSH	4	9.3000000	0.8531803	7.1000000	10.6500000	1.7063606	2.9116667	18.3479640

1 The SAS System 17:48 Wednesday, August 29, 2001 15

----- STUDY=E DURATION=120 TRT=0.1-mg/k -----

Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
T4	6	3.3666667	0.2654137	2.4000000	4.1000000	0.6501282	0.4226667	19.3107384
T3	6	114.7500000	10.2361695	86.5000000	151.0000000	25.0733923	628.6750000	21.8504508
TSH	0							

----- STUDY=E DURATION=120 TRT=1.0-mg/k -----

Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
T4	6	3.2333333	0.1763834	2.7000000	3.7000000	0.4320494	0.1866667	13.3623520
T3	6	118.1666667	5.7888782	93.0000000	134.0000000	14.1797978	201.0666667	11.9998289
TSH	0							

----- STUDY=E DURATION=120 TRT=3.0-mg/k -----

Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
T4	6	3.2666667	0.2512192	2.8000000	4.5000000	0.6153590	0.3786667	18.8375196
T3	6	99.5000000	8.0890873	67.5000000	125.0000000	19.8141364	392.6000000	19.9137049
TSH	0							

----- STUDY=E DURATION=120 TRT=30.0-mg/ -----

Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
T4	6	3.5166667	0.2713137	3.0000000	4.7000000	0.6645801	0.4416667	18.8980114
T3	6	119.9166667	10.5304453	97.0000000	167.0000000	25.7942177	665.3416667	21.5101190

TSH	0
-----	---

----- STUDY=E DURATION=120 TRT=Control -----

Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
T4	6	3.4000000	0.1983263	2.7000000	4.1000000	0.4857983	0.2360000	14.2881856
T3	6	129.8000000	11.9050409	103.0000000	171.0000000	29.1612757	850.3800000	22.4663141
TSH	0	.	.	.	.	.	.	.

1 The SAS System 17:48 Wednesday, August 29, 2001 16

----- STUDY=G DURATION=14 TRT=0.1-mg/k -----

Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
T4	6	2.7833333	0.2006932	2.2000000	3.6000000	0.4915960	0.2416667	17.6621332
T3	0	.	.	.	.	.	.	.
TSH	0	.	.	.	.	.	.	.

----- STUDY=G DURATION=14 TRT=1.0-mg/k -----

Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
T4	6	3.5833333	0.1641476	3.0000000	4.1000000	0.4020779	0.1616667	11.2207796
T3	0	.	.	.	.	.	.	.
TSH	0	.	.	.	.	.	.	.

----- STUDY=G DURATION=14 TRT=3.0-mg/k -----

Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
T4	6	3.3333333	0.1382429	3.0000000	3.9000000	0.3386247	0.1146667	10.1587401
T3	0	.	.	.	.	.	.	.
TSH	0	.	.	.	.	.	.	.

----- STUDY=G DURATION=14 TRT=30.0-mg/ -----

Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
T4	6	2.7833333	0.2023473	2.0000000	3.3000000	0.4956477	0.2456667	17.8077027
T3	0	.	.	.	.	.	.	.
TSH	0	.	.	.	.	.	.	.

----- STUDY=G DURATION=14 TRT=Control -----

Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV								
T4	6	2.9000000	0.1505545	2.4000000	3.5000000	0.3687818	0.1360000	12.7166130								
T3	0	.	.	.	.	.	.	.								
TSH	0	.	.	.	.	.	.	.								
<hr/>																
1	The SAS System					17:48 Wednesday, August 29, 2001 17										
<hr/>																
----- STUDY=I DURATION=14 TRT=0.1-mg/k -----																
Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV								
T4	6	3.4666667	0.1320774	2.9500000	3.9500000	0.3235223	0.1046667	9.3323735								
T3	0	.	.	.	.	.	.	.								
TSH	0	.	.	.	.	.	.	.								
<hr/>																
----- STUDY=I DURATION=14 TRT=1.0-mg/k -----																
Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV								
T4	6	3.3500000	0.0836660	3.1000000	3.7000000	0.2049390	0.0420000	6.1175825								
T3	0	.	.	.	.	.	.	.								
TSH	0	.	.	.	.	.	.	.								
<hr/>																
----- STUDY=I DURATION=14 TRT=3.0-mg/k -----																
Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV								
T4	6	3.0916667	0.1075614	2.7500000	3.4000000	0.2634704	0.0694167	8.5219546								
T3	0	.	.	.	.	.	.	.								
TSH	0	.	.	.	.	.	.	.								
<hr/>																
----- STUDY=I DURATION=14 TRT=30.0-mg/ -----																
Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV								
T4	6	2.7250000	0.2100595	2.1500000	3.4000000	0.5145386	0.2647500	18.8821515								
T3	0	.	.	.	.	.	.	.								
TSH	0	.	.	.	.	.	.	.								
<hr/>																
----- STUDY=I DURATION=14 TRT=Control -----																
Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV								
T4	6	3.3083333	0.1619756	2.7500000	3.9500000	0.3967577	0.1574167	11.9926758								
T3	0	.	.	.	.	.	.	.								
TSH	0	.	.	.	.	.	.	.								

1

The SAS System

17:48 Wednesday, August 29, 2001 18

----- STUDY=J DURATION=14 TRT=0.1-mg/k -----

Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
T4	6	3.4583333	0.1319196	2.9500000	3.9000000	0.3231357	0.1044167	9.3436823
T3	0	.	.	.	.	.	.	.
TSH	0	.	.	.	.	.	.	.

----- STUDY=J DURATION=14 TRT=1.0-mg/k -----

Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
T4	6	3.3833333	0.1574096	2.9500000	3.9000000	0.3855732	0.1486667	11.3962512
T3	0	.	.	.	.	.	.	.
TSH	0	.	.	.	.	.	.	.

----- STUDY=J DURATION=14 TRT=3.0-mg/k -----

Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
T4	6	3.5083333	0.1060005	3.2500000	3.9000000	0.2596472	0.0674167	7.4008702
T3	0	.	.	.	.	.	.	.
TSH	0	.	.	.	.	.	.	.

----- STUDY=J DURATION=14 TRT=30.0-mg/ -----

Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
T4	6	3.1750000	0.0750000	2.9500000	3.4000000	0.1837117	0.0337500	5.7861962
T3	0	.	.	.	.	.	.	.
TSH	0	.	.	.	.	.	.	.

----- STUDY=J DURATION=14 TRT=Control -----

Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
T4	6	3.4666667	0.2120010	2.7500000	3.9000000	0.5192944	0.2696667	14.9796460
T3	0	.	.	.	.	.	.	.
TSH	0	.	.	.	.	.	.	.

1

The SAS System

17:48 Wednesday, August 29, 2001 19

----- STUDY=K DURATION=14 TRT=0.1-mg/k -----

Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
T4	6	3.4583333	0.1319196	2.9500000	3.9000000	0.3231357	0.1044167	9.3436823
T3	0	.	.	.	.	.	.	.
TSH	0	.	.	.	.	.	.	.

T4	6	3.9500000	0.2604483	3.1000000	4.8000000	0.6379655	0.4070000	16.1510257
T3	0	.	.	.	.	.	.	.
TSH	0	.	.	.	.	.	.	.

----- STUDY=K DURATION=14 TRT=1.0-mg/k -----

Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
T4	6	4.2333333	0.1605546	3.5000000	4.5000000	0.3932768	0.1546667	9.2900039
T3	0	.	.	.	.	.	.	.
TSH	0	.	.	.	.	.	.	.

----- STUDY=K DURATION=14 TRT=3.0-mg/k -----

Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
T4	6	3.9333333	0.1406335	3.5000000	4.3000000	0.3444803	0.1186667	8.7579733
T3	0	.	.	.	.	.	.	.
TSH	0	.	.	.	.	.	.	.

----- STUDY=K DURATION=14 TRT=30.0-mg/ -----

Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
T4	6	3.1000000	0.1632993	2.5000000	3.7000000	0.4000000	0.1600000	12.9032258
T3	0	.	.	.	.	.	.	.
TSH	0	.	.	.	.	.	.	.

----- STUDY=K DURATION=14 TRT=Control -----

Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
T4	6	3.7833333	0.2427848	3.1000000	4.8000000	0.5946988	0.3536667	15.7189111
T3	0	.	.	.	.	.	.	.
TSH	0	.	.	.	.	.	.	.

1

The SAS System

17:48 Wednesday, August 29, 2001 20

----- STUDY=N DURATION=90 TRT=0.1-mg/k -----

Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
T4	0	.	.	.	.	.	.	.
T3	6	89.2500000	4.9761933	72.0000000	101.5000000	12.1891345	148.5750000	13.6572936
TSH	0	.	.	.	.	.	.	.

----- STUDY=N DURATION=90 TRT=1.0-mg/k -----

Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
T4	0	.	.	.	.	.	.	.
T3	6	102.4166667	4.5229354	91.0000000	118.0000000	11.0788838	122.7416667	10.8174618
TSH	0	.	.	.	.	.	.	.

----- STUDY=N DURATION=90 TRT=3.0-mg/k -----

Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
T4	0	.	.	.	.	.	.	.
T3	5	93.1000000	12.6079340	62.0000000	124.5000000	28.1921975	794.8000000	30.2816300
TSH	0	.	.	.	.	.	.	.

----- STUDY=N DURATION=90 TRT=30.0-mg/ -----

Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
T4	0	.	.	.	.	.	.	.
T3	5	101.1000000	8.7198050	72.5000000	120.5000000	19.4980768	380.1750000	19.2859316
TSH	0	.	.	.	.	.	.	.

----- STUDY=N DURATION=90 TRT=Control -----

Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
T4	0	.	.	.	.	.	.	.
T3	6	115.5000000	1.4200939	112.0000000	121.0000000	3.4785054	12.1000000	3.0116930
TSH	0	.	.	.	.	.	.	.

1 The SAS System 17:48 Wednesday, August 29, 2001 21

----- STUDY=T DURATION=14 TRT=0.1-mg/k -----

Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
T4	0	.	.	.	.	.	.	.
T3	6	110.8333333	8.7812932	75.0000000	131.5000000	21.5096877	462.6666667	19.4072371
TSH	0	.	.	.	.	.	.	.

----- STUDY=T DURATION=14 TRT=1.0-mg/k -----

Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
T4	0	.	.	.	.	.	.	.

T3	6	133.6666667	2.3652578	124.5000000	140.0000000	5.7936747	33.5666667	4.3344200
TSH	0	.	.	.	.	.	.	.

----- STUDY=T DURATION=14 TRT=3.0-mg/k -----

Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
T4	0	.	.	.	.	.	.	.
T3	6	124.4166667	10.7202431	104.5000000	175.0000000	26.2591254	689.5416667	21.1057940
TSH	0	.	.	.	.	.	.	.

----- STUDY=T DURATION=14 TRT=30.0-mg/ -----

Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
T4	0	.	.	.	.	.	.	.
T3	6	117.0833333	8.3040318	100.5000000	155.5000000	20.3406408	413.7416667	17.3727893
TSH	0	.	.	.	.	.	.	.

----- STUDY=T DURATION=14 TRT=Control -----

Variable	N	Mean	Std Error	Minimum	Maximum	Std Dev	Variance	CV
T4	0	.	.	.	.	.	.	.
T3	6	124.8333333	7.4717988	100.5000000	148.5000000	18.3020946	334.9666667	14.6612240
TSH	0	.	.	.	.	.	.	.

1                          MOUSE IMMUNOTOX THYROID HORMONE DATA                          17:48 Wednesday, August 29, 2001 22  
PROC GLM - STUDY BY TRT INTERACTIONS

General Linear Models Procedure  
Class Level Information

Class	Levels	Values
DURATION	3	14 90 120
TRT	5	0.1-mg/k 1.0-mg/k 3.0-mg/k 30.0-mg/ Control

Number of observations in data set = 330

Group	Obs	Dependent Variables
1	268	T4
2	88	T3
3	79	TSH

NOTE: Variables in each group are consistent with respect to the presence or absence of missing values.

1 MOUSE IMMUNOTOX THYROID HORMONE DATA 17:48 Wednesday, August 29, 2001 23  
PROC GLM - STUDY BY TRT INTERACTIONS

General Linear Models Procedure

Dependent Variable: T4

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	14	20.14201990	1.43871571	5.17	0.0001
Error	253	70.46066667	0.27850066		
Corrected Total	267	90.60268657			
	R-Square	C.V.	Root MSE		T4 Mean
	0.2222312	16.51858	0.52773162		3.19477612
Source	DF	Type I SS	Mean Square	F Value	Pr > F
DURATION	2	4.64494289	2.32247144	8.34	0.0003
TRT	4	7.86570597	1.96642649	7.06	0.0001
DURATION*TRT	8	7.63137104	0.95392138	3.43	0.0009
Source	DF	Type III SS	Mean Square	F Value	Pr > F
DURATION	2	4.71871609	2.35935805	8.47	0.0003
TRT	4	6.72973611	1.68243403	6.04	0.0001
DURATION*TRT	8	7.63137104	0.95392138	3.43	0.0009

1 MOUSE IMMUNOTOX THYROID HORMONE DATA 17:48 Wednesday, August 29, 2001 24  
PROC GLM - STUDY BY TRT INTERACTIONS

General Linear Models Procedure

Dependent Variable: T3

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	14	14338.84106061	1024.20293290	2.54	0.0052
Error	73	29479.71666667	403.83173516		
Corrected Total	87	43818.55772727			
	R-Square	C.V.	Root MSE		T3 Mean
	0.327232	17.73411	20.09556506		113.31590909

Source	DF	Type I SS	Mean Square	F Value	Pr > F
DURATION	2	7239.31239394	3619.65619697	8.96	0.0003
TRT	4	4487.43696062	1121.85924016	2.78	0.0330
DURATION*TRT	8	2612.09170604	326.51146326	0.81	0.5972
Source	DF	Type III SS	Mean Square	F Value	Pr > F
DURATION	2	7365.49016034	3682.74508017	9.12	0.0003
TRT	4	4479.15453748	1119.78863437	2.77	0.0333
DURATION*TRT	8	2612.09170604	326.51146326	0.81	0.5972

1    MOUSE IMMUNOTOX THYROID HORMONE DATA  
  PROC GLM - STUDY BY TRT INTERACTIONS    17:48 Wednesday, August 29, 2001 25

## General Linear Models Procedure

Dependent Variable: TSH

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	9	71.53273849	7.94808205	2.28	0.0263
Error	69	240.12770455	3.48011166		
Corrected Total	78	311.66044304			
	R-Square	C.V.	Root MSE		TSH Mean
	0.229521	23.48792	1.86550574		7.94240506

Source	DF	Type I SS	Mean Square	F Value	Pr > F
DURATION	1	42.50175426	42.50175426	12.21	0.0008
TRT	4	18.91602865	4.72900716	1.36	0.2572
DURATION*TRT	4	10.11495558	2.52873889	0.73	0.5768
Source	DF	Type III SS	Mean Square	F Value	Pr > F
DURATION	1	42.23252243	42.23252243	12.14	0.0009
TRT	4	13.74081084	3.43520271	0.99	0.4205
DURATION*TRT	4	10.11495558	2.52873889	0.73	0.5768

1    MOUSE IMMUNOTOX THYROID HORMONE DATA  
  PROC GLM - COLLAPSED ACROSS STUDIES    17:48 Wednesday, August 29, 2001 26

----- DURATION=14 -----

General Linear Models Procedure  
Class Level Information

Class     Levels     Values

TRT            5      0.1-mg/k 1.0-mg/k 3.0-mg/k 30.0-mg/ Control

Number of observations in by group = 180

Group	Obs	Dependent Variables
0	0	TSH
1	150	T4
2	30	T3

NOTE: Variables in each group are consistent with respect to the presence or absence of missing values.

1                          MOUSE IMMUNOTOX THYROID HORMONE DATA                  17:48 Wednesday, August 29, 2001 27  
PROC GLM - COLLAPSED ACROSS STUDIES

----- DURATION=14 -----

General Linear Models Procedure

Dependent Variable: T4

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	4	5.77210000	1.44302500	4.86	0.0010
Error	145	43.07150000	0.29704483		
Corrected Total	149	48.84360000			
		R-Square	C.V.	Root MSE	T4 Mean
		0.118175	16.63670	0.54501819	3.27600000

Source	DF	Type I SS	Mean Square	F Value	Pr > F
TRT	4	5.77210000	1.44302500	4.86	0.0010
Source	DF	Type III SS	Mean Square	F Value	Pr > F
TRT	4	5.77210000	1.44302500	4.86	0.0010

1                          MOUSE IMMUNOTOX THYROID HORMONE DATA                  17:48 Wednesday, August 29, 2001 28  
PROC GLM - COLLAPSED ACROSS STUDIES

----- DURATION=14 -----

General Linear Models Procedure

## Duncan's Multiple Range Test for variable: T4

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha= 0.05 df= 145 MSE= 0.297045

Number of Means	2	3	4	5
Critical Range	.2781	.2927	.3025	.3096

Means with the same letter are not significantly different.

Duncan Grouping	Mean	N	TRT
A	3.4633	30	1.0-mg/k
A	3.3883	30	Control
A	3.3283	30	0.1-mg/k
A	3.3000	30	3.0-mg/k
B	2.9000	30	30.0-mg/

1

MOUSE IMMUNOTOX THYROID HORMONE DATA  
PROC GLM - COLLAPSED ACROSS STUDIES

17:48 Wednesday, August 29, 2001 29

----- DURATION=14 -----

## General Linear Models Procedure

Dependent Variable: T3

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	4	1792.25000000	448.06250000	1.16	0.3529
Error	25	9672.41666667	386.89666667		
Corrected Total	29	11464.66666667			

R-Square	C.V.	Root MSE	T3 Mean
0.156328	16.10070	19.66968903	122.16666667

Source	DF	Type I SS	Mean Square	F Value	Pr > F
TRT	4	1792.25000000	448.06250000	1.16	0.3529
Source	DF	Type III SS	Mean Square	F Value	Pr > F
TRT	4	1792.25000000	448.06250000	1.16	0.3529

1

MOUSE IMMUNOTOX THYROID HORMONE DATA  
PROC GLM - COLLAPSED ACROSS STUDIES

17:48 Wednesday, August 29, 2001 30

----- DURATION=14 -----

## General Linear Models Procedure

## Duncan's Multiple Range Test for variable: T3

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha= 0.05 df= 25 MSE= 386.8967

Number of Means	2	3	4	5
Critical Range	23.39	24.57	25.33	25.86

Means with the same letter are not significantly different.

Duncan Grouping	Mean	N	TRT
A	133.67	6	1.0-mg/k
A	124.83	6	Control
A	124.42	6	3.0-mg/k
A	117.08	6	30.0-mg/
A	110.83	6	0.1-mg/k

1

MOUSE IMMUNOTOX THYROID HORMONE DATA  
PROC GLM - COLLAPSED ACROSS STUDIES

17:48 Wednesday, August 29, 2001 31

----- DURATION=90 -----

General Linear Models Procedure  
Class Level Information

Class	Levels	Values
TRT	5	0.1-mg/k 1.0-mg/k 3.0-mg/k 30.0-mg/ Control

Number of observations in by group = 90

Group	Obs	Dependent Variables
1	58	T4
2	28	T3
3	49	TSH

NOTE: Variables in each group are consistent with respect to the presence or absence of missing values.

1

MOUSE IMMUNOTOX THYROID HORMONE DATA  
PROC GLM - COLLAPSED ACROSS STUDIES

17:48 Wednesday, August 29, 2001 32

----- DURATION=90 -----

General Linear Models Procedure

Dependent Variable: T4

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	4	8.63931034	2.15982759	8.40	0.0001
Error	53	13.62500000	0.25707547		
Corrected Total	57	22.26431034			
		R-Square	C.V.	Root MSE	T4 Mean
		0.388034	17.20744	0.50702611	2.94655172
Source	DF	Type I SS	Mean Square	F Value	Pr > F
TRT	4	8.63931034	2.15982759	8.40	0.0001
Source	DF	Type III SS	Mean Square	F Value	Pr > F
TRT	4	8.63931034	2.15982759	8.40	0.0001

1

MOUSE IMMUNOTOX THYROID HORMONE DATA  
PROC GLM - COLLAPSED ACROSS STUDIES

17:48 Wednesday, August 29, 2001 33

----- DURATION=90 -----

General Linear Models Procedure

Duncan's Multiple Range Test for variable: T4

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha= 0.05 df= 53 MSE= 0.257075  
WARNING: Cell sizes are not equal.  
Harmonic Mean of cell sizes= 11.53846

Number of Means 2 3 4 5  
Critical Range .4234 .4453 .4598 .4703

Means with the same letter are not significantly different.

Duncan Grouping	Mean	N	TRT
A	3.6000	12	Control

	B	3.0167	12	0.1-mg/k
	B			
C	B	2.8500	10	1.0-mg/k
C	B			
C	B	2.8167	12	3.0-mg/k
C				
C		2.4333	12	30.0-mg/

1

MOUSE IMMUNOTOX THYROID HORMONE DATA  
PROC GLM - COLLAPSED ACROSS STUDIES

17:48 Wednesday, August 29, 2001 34

----- DURATION=90 -----

## General Linear Models Procedure

Dependent Variable: T3

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	4	2407.01666667	601.75416667	2.26	0.0935
Error	23	6116.98333333	265.95579710		
Corrected Total	27	8524.00000000			
		R-Square	C.V.	Root MSE	T3 Mean
		0.282381	16.22702	16.30815125	100.50000000
Source	DF	Type I SS	Mean Square	F Value	Pr > F
TRT	4	2407.01666667	601.75416667	2.26	0.0935
Source	DF	Type III SS	Mean Square	F Value	Pr > F
TRT	4	2407.01666667	601.75416667	2.26	0.0935

1

MOUSE IMMUNOTOX THYROID HORMONE DATA  
PROC GLM - COLLAPSED ACROSS STUDIES

17:48 Wednesday, August 29, 2001 35

----- DURATION=90 -----

## General Linear Models Procedure

Duncan's Multiple Range Test for variable: T3

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha= 0.05 df= 23 MSE= 265.9558  
 WARNING: Cell sizes are not equal.  
 Harmonic Mean of cell sizes= 5.555556

Number of Means	2	3	4	5
Critical Range	20.24	21.26	21.91	22.37

Means with the same letter are not significantly different.

Duncan Grouping		Mean	N	TRT
	A	115.500	6	Control
	A	102.417	6	1.0-mg/k
B	A	101.100	5	30.0-mg/
B	A	93.100	5	3.0-mg/k
B		89.250	6	0.1-mg/k

1 MOUSE IMMUNOTOX THYROID HORMONE DATA 17:48 Wednesday, August 29, 2001 36  
 PROC GLM - COLLAPSED ACROSS STUDIES

----- DURATION=90 -----

#### General Linear Models Procedure

Dependent Variable: TSH

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	4	25.00798423	6.25199606	1.90	0.1274
Error	44	144.80895455	3.29111260		
Corrected Total	48	169.81693878			
R-Square		C.V.	Root MSE		TSH Mean
0.147264		21.30194	1.81414239		8.51632653

Source	DF	Type I SS	Mean Square	F Value	Pr > F
TRT	4	25.00798423	6.25199606	1.90	0.1274
Source	DF	Type III SS	Mean Square	F Value	Pr > F
TRT	4	25.00798423	6.25199606	1.90	0.1274

1 MOUSE IMMUNOTOX THYROID HORMONE DATA 17:48 Wednesday, August 29, 2001 37  
 PROC GLM - COLLAPSED ACROSS STUDIES

----- DURATION=90 -----

## General Linear Models Procedure

Duncan's Multiple Range Test for variable: TSH

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha= 0.05 df= 44 MSE= 3.291113

WARNING: Cell sizes are not equal.

Harmonic Mean of cell sizes= 9.69163

Number of Means	2	3	4	5
Critical Range	1.661	1.747	1.803	1.843

Means with the same letter are not significantly different.

Duncan Grouping		Mean	N	TRT
	A	9.9050	10	Control
	A			
B	A	8.3500	8	30.0-mg/
B	A			
B	A	8.2636	11	3.0-mg/k
B				
B		8.0600	10	1.0-mg/k
B				
B		7.9950	10	0.1-mg/k

1

MOUSE IMMUNOTOX THYROID HORMONE DATA  
PROC GLM - COLLAPSED ACROSS STUDIES

17:48 Wednesday, August 29, 2001 38

----- DURATION=120 -----

General Linear Models Procedure  
Class Level Information

Class	Levels	Values
TRT	5	0.1-mg/k 1.0-mg/k 3.0-mg/k 30.0-mg/ Control

Number of observations in by group = 60

Group	Obs	Dependent Variables
1	60	T4
2	30	T3
3	30	TSH

NOTE: Variables in each group are consistent with respect to the presence or absence of missing values.

1

MOUSE IMMUNOTOX THYROID HORMONE DATA

17:48 Wednesday, August 29, 2001 39

## PROC GLM - COLLAPSED ACROSS STUDIES

----- DURATION=120 -----

## General Linear Models Procedure

Dependent Variable: T4

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	4	1.08566667	0.27141667	1.08	0.3732
Error	55	13.76416667	0.25025758		
Corrected Total	59	14.84983333			
		R-Square	C.V.	Root MSE	T4 Mean
		0.073110	15.47986	0.50025751	3.23166667
Source	DF	Type I SS	Mean Square	F Value	Pr > F
TRT	4	1.08566667	0.27141667	1.08	0.3732
Source	DF	Type III SS	Mean Square	F Value	Pr > F
TRT	4	1.08566667	0.27141667	1.08	0.3732

1

MOUSE IMMUNOTOX THYROID HORMONE DATA  
PROC GLM - COLLAPSED ACROSS STUDIES

17:48 Wednesday, August 29, 2001 40

----- DURATION=120 -----

## General Linear Models Procedure

## Duncan's Multiple Range Test for variable: T4

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha= 0.05 df= 55 MSE= 0.250258

Number of Means	2	3	4	5
Critical Range	.4093	.4305	.4445	.4547

Means with the same letter are not significantly different.

Duncan Grouping	Mean	N	TRT
A	3.3917	12	30.0-mg/
A	3.2750	12	Control
A	3.2667	12	0.1-mg/k
A			

A	3.2417	12	1.0-mg/k
A			
A	2.9833	12	3.0-mg/k

1 MOUSE IMMUNOTOX THYROID HORMONE DATA 17:48 Wednesday, August 29, 2001 41  
 PROC GLM - COLLAPSED ACROSS STUDIES

----- DURATION=120 -----

#### General Linear Models Procedure

Dependent Variable: T3

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	4	2900.26200000	725.06550000	1.32	0.2884
Error	25	13690.31666667	547.61266667		
Corrected Total	29	16590.57866667			

R-Square	C.V.	Root MSE	T3 Mean
0.174814	20.09945	23.40112533	116.42666667

Source	DF	Type I SS	Mean Square	F Value	Pr > F
TRT	4	2900.26200000	725.06550000	1.32	0.2884
Source	DF	Type III SS	Mean Square	F Value	Pr > F
TRT	4	2900.26200000	725.06550000	1.32	0.2884

1 MOUSE IMMUNOTOX THYROID HORMONE DATA 17:48 Wednesday, August 29, 2001 42  
 PROC GLM - COLLAPSED ACROSS STUDIES

----- DURATION=120 -----

#### General Linear Models Procedure

Duncan's Multiple Range Test for variable: T3

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha= 0.05 df= 25 MSE= 547.6127

Number of Means	2	3	4	5
Critical Range	27.83	29.23	30.13	30.77

Means with the same letter are not significantly different.

Duncan Grouping	Mean	N	TRT
-----------------	------	---	-----

A	129.80	6	Control
A			
A	119.92	6	30.0-mg/
A			
A	118.17	6	1.0-mg/k
A			
A	114.75	6	0.1-mg/k
A			
A	99.50	6	3.0-mg/k

1

MOUSE IMMUNOTOX THYROID HORMONE DATA  
PROC GLM - COLLAPSED ACROSS STUDIES

17:48 Wednesday, August 29, 2001 43

----- DURATION=120 -----

## General Linear Models Procedure

Dependent Variable: TSH

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	4	4.02300000	1.00575000	0.26	0.8984
Error	25	95.31875000	3.81275000		
Corrected Total	29	99.34175000			
R-Square		C.V.	Root MSE		TSH Mean
		0.040497	27.87475	1.95262644	7.00500000
Source	DF	Type I SS	Mean Square	F Value	Pr > F
TRT	4	4.02300000	1.00575000	0.26	0.8984
Source	DF	Type III SS	Mean Square	F Value	Pr > F
TRT	4	4.02300000	1.00575000	0.26	0.8984

1

MOUSE IMMUNOTOX THYROID HORMONE DATA  
PROC GLM - COLLAPSED ACROSS STUDIES

17:48 Wednesday, August 29, 2001 44

----- DURATION=120 -----

## General Linear Models Procedure

Duncan's Multiple Range Test for variable: TSH

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha= 0.05 df= 25 MSE= 3.81275

Number of Means	2	3	4	5
Critical Range	2.322	2.439	2.514	2.568

Means with the same letter are not significantly different.

Duncan Grouping	Mean	N	TRT
A	7.650	6	3.0-mg/k
A	7.100	6	Control
A	6.917	6	0.1-mg/k
A	6.792	6	30.0-mg/
A	6.567	6	1.0-mg/k

## APPENDIX 8

### Rabbit Teratology Study

Reference: Argus Research Laboratories, Inc. (1998b) Oral (drinking water) developmental toxicity study of ammonium perchlorate in rabbits [report amendment: September 10]. Horsham, PA: Argus Research Laboratories, Inc.; protocol report no. 1416-002.

11

The SAS System

12:26 Monday, November 2, 1998

NOTE: Copyright © 1989-1996 by SAS Institute Inc., Cary, NC, USA.

NOTE: SAS (r) Proprietary Software Release 6.12 TS020  
Licensed to US ENVIRONMENTAL PROTECTION AGENCY, Site 0019614059.NOTE: Running on ALPHASERVER Model 2100 5/300 Serial Number 80000000.  
Welcome to the NHEERL-RTP SAS Information Delivery System.

```

1      *THIS FILE IS FOUND AT [CROFTON.THYROID.perchlorate]PERCHLORATE RABBIT.SAS;
2      *IT ANALYZES THE THYROID HORMONE DATA FROM THE WPAFB 90 DAY PERCHLORATE STUDY;
3
4
5      *INPUT DATA INTO SAS DATASET;
6      DATA RAW; INFILE '[CROFTON.THYROID.PERCHLORATE]PERCHLORATE RABBIT.TXT';
7          INPUT ANIM$ DOSE$ GENDER$ AGE$ PREGSTAT$ T3 T4 TSH CYST$ ECTOP$ 
8              IREGCYST$ MONONUC$ FOLHYPER$ ATROPHY$;
9
10     * DEFINITIONS OF VARIABLE NAMES:
11     *      ANIM = ANIMAL ID#;
12     *      DOSE = TREATMENT CODE;
13     *      AGE = AGE IN DAYS OF GESTATION;
14     *      PREGSTAT = PREGNANCY STATUS, NP=NOT PREGNANT, P=PREGNANT;
15     *      T3 = TOTAL SERUM TRIIODOTHYRONINE,NG/DL;
16     *      T4 = TOTAL SERUM THYROXINE,NG/DL;
17     *      TSH = TOTAL SERUM THYROID STIMULATION HORMONE,NG/DL;
18     *      CYST = PRESENCE OF THYROID GLAND CYSTS;
19     *      ECTOP = PRESENCE OF ECTOPIC THYMIC TISSUE;
20     *      IREGCYST = RANK SCORE OF IRREGULAR/CYSTIC FOLLICLES;
21     *      MONONUC = RANK SCORE OF A FOCAL INFILTRATION OF MONONUCLEAR CELLS;
22     *      HYPER = RANK SCORE OF FOLLICULAR CELL HYPERTROPHY;
23     *      ATROPHY = RANK SCORE OF FOCAL EPITHELIAR ATROPHY;
24
25     *NOTES FOR DICHOTOMOUS VARIABLES;
26     *      * = NO PRESENT, SPECIFICALLY LISTED IN REPORT;
27     *      P = PRESENT, SPECIFICALLY LISTED IN REPORT;
28     *      N = NOT PRESENT, NOT LISTED IN REPORT;
29
30     *NOTES FOR RANKED SCORES;
31     *      INCIDENCE WAS RANKED FROM 1-4;
32     *      * = INCIDENCE ABSENT, SPECIFICALLY LISTED IN REPORT;
33     *      N = INCIDENCE ABSENT, NOT LISTED IN REPORT;
34
35
36     *ASSIGN TREATMENT VALUES TO DOSE CODES;
37     IF DOSE = '1' THEN TRT = '1-----Control';
38     IF DOSE = '2' THEN TRT = '2-0.1mg/kg/day';
39     IF DOSE = '3' THEN TRT = '3-1.0mg/kg/day';
40     IF DOSE = '4' THEN TRT = '4--10mg/kg/day';
41     IF DOSE = '5' THEN TRT = '5--30mg/kg/day';
42     IF DOSE = '6' THEN TRT = '6-100mg/kg/day';
43
44

```

NOTE: The infile '[CROFTON.THYROID.PERCHLORATE]PERCHLORATE\_RABBIT.TXT' is:  
File=DSA21:[SAS\$USERS.CROFTON.THYROID.PERCHLORATE]PERCHLORATE\_RABBIT.TXT

12

The SAS System

12:26 Monday, November 2, 1998

NOTE: 150 records were read from the infile '[CROFTON.THYROID.PERCHLORATE] PERCHLORATE\_RABBIT.TXT'.  
 The minimum record length was 143.  
 The maximum record length was 143.  
 NOTE: The data set WORK.RAW has 150 observations and 15 variables.

```
44      PROC PRINT;
45          TITLE "ORIGINAL RABBIT DEVELOPMENTAL DATA SET FOR ALL THYROID VARIABLES";
46
```

NOTE: The PROCEDURE PRINT printed pages 1-3.

```
47      DATA CONVERT; SET RAW;
48
49      *ASSIGN A VALUE OF 0 TO ALL MISSING OR '*' VALUES, ASSING A VALUE OF 1 TO ALL 'P' VALUES;
50      IF CYST = 'N' THEN CYST = '0';
51      IF CYST = '*' THEN CYST = '0';
52      IF CYST = 'P' THEN CYST = '1';
53
54      IF ECTOP = 'N' THEN ECTOP = '0';
55      IF ECTOP = '*' THEN ECTOP = '0';
56      IF ECTOP = 'P' THEN ECTOP = '1';
57
58      IF IREGCYST = 'N' THEN IREGCYST = '0';
59      IF IREGCYST = '*' THEN IREGCYST = '0';
60
61      IF MONONUC = 'N' THEN MONONUC = '0';
62      IF MONONUC = '*' THEN MONONUC = '0';
63
64      IF FOLHYPER = 'N' THEN FOLHYPER = '0';
65      IF FOLHYPER = '*' THEN FOLHYPER = '0';
66
67      IF ATROPHY = 'N' THEN ATROPHY = '0';
68      IF ATROPHY = '*' THEN ATROPHY = '0';
69
70
```

NOTE: The data set WORK.CONVERT has 150 observations and 15 variables.

```
70      PROC PRINT;
71          TITLE "RABBIT DEVELOPMENTAL DATA SET - FINAL DATA SET FOR OUTPUT";
72
73      *OUTPUT THE DATASET TO AN TEMPORARY ASCII FILE;
```

NOTE: The PROCEDURE PRINT printed pages 4-6.

```
74      DATA OUTPUT1; SET CONVERT;
75          FILE '[CROFTON.THYROID.PERCHLORATE] TEMP.ASC';
76          PUT ANIM 1-4 TRT 6-19 PREGSTAT T3 T4 TSH CYST ECTOP IREGCYST MONONUC FOLHYPER ATROPHY;
77
78      *INPUT ASCII DATASET AS ALL NUMERIC VARIABLES;
```

NOTE: The file '[CROFTON.THYROID.PERCHLORATE] TEMP.ASC' is:  
 File=DSA21:[SAS\$USERS.CROFTON.THYROID.PERCHLORATE] TEMP.ASC

NOTE: 150 records were written to the file '[CROFTON.THYROID.PERCHLORATE] TEMP.ASC'.  
 The minimum record length was 38.  
 The maximum record length was 50.

NOTE: The data set WORK.OUTPUT1 has 150 observations and 15 variables.

13

The SAS System

12:26 Monday, November 2, 1998

```
79      DATA FINAL1; INFILE '[CROFTON.THYROID.PERCHLORATE] TEMP.ASC';
80          INPUT ANIM TRT$ 6-19 PREGSTAT$ T3 T4 TSH CYST ECTOP IREGCYST MONONUC FOLHYPER ATROPHY;
```

```

81
82

NOTE: The infile '[CROFTON.THYROID.PERCHLORATE] TEMP.ASC' is:
      File=DSA21:[SAS$USERS.CROFTON.THYROID.PERCHLORATE] TEMP.ASC
NOTE: 150 records were read from the infile '[CROFTON.THYROID.PERCHLORATE] TEMP.ASC'.
      The minimum record length was 38.
      The maximum record length was 50.
NOTE: The data set WORK.FINAL1 has 150 observations and 12 variables.
82      PROC SORT; BY PREGSTAT TRT;
83
84
85
86
87      *GENERATE GROUP MEANS TABLES - SORT BY TREATMENT;
88
89
90
91
92      *RUN ONEWAY ANOVAS - FOR T3 T4 AND TSH VARIABLES;
93
94
95
96
97
98
99
100
101
102      ENDSAS;
NOTE: The PROCEDURE PRINT printed pages 7-9.
87      PROC SORT; BY PREGSTAT TRT;
88
89
90
91
92
93
94
95
96
97
98
99
100
101
102
NOTE: The PROCEDURE MEANS printed pages 10-13.
93      PROC SORT; BY PREGSTAT TRT;
94
95
96
97
98
99
100
101
102
NOTE: Input data set is already sorted, no sorting done.
94      PROC GLM; BY PREGSTAT;
95      CLASSES TRT;
96      MODEL T3 T4 TSH = TRT;
97      MEANS TRT/DUNCAN LINE;
98      TITLE1 "RABBIT DEVELOPMENTAL DATA THYROID HORMONE DATA";
99      TITLE2 "PROC GLM WITH TUKEYS";
100
101
102
NOTE: The PROCEDURE GLM printed pages 14-27.

```

14

The SAS System

12:26 Monday, November 2, 1998

NOTE: SAS Institute Inc., SAS Campus Drive, Cary, NC USA 27513-2414

ORIGINAL RABBIT DEVELOPMENTAL DATA SET FOR ALL THYROID VARIABLES														12:26 Monday, November 2, 1998		
OBS	ANIM	DOSE	GENDER	AGE	PREGSTAT	T3	T4	TSH	CYST	ECTOP	IREGCYST	MONONUC	FOLHYPER	ATROPHY	TRT	
1	7771	5	F	29D	NP	143.17	1.01	1.38	P	N	N	N	1	N	5--30mg/kg/day	
2	7739	4	F	29D	NP	180.61	1.92	1.93	*	N	N	N	*	N	4--10mg/kg/day	
3	7660	1	F	29D	NP	159.94	0.57	1.73	P	P	N	N	N	N	1----Control	
4	7795	6	F	29D	NP	153.89	0.86	2.07	*	N	N	N	*	N	6-100mg/kg/day	
5	7700	2	F	29D	NP	179.83	2.29	1.69	P	N	N	N	N	N	2-0.1mg/kg/day	
6	7671	1	F	29D	NP	224.04	2.07	2.42	*	P	*	*	*	N	N	1----Control
7	7653	1	F	29D	NP	162.82	1.98	1.77	*	*	N	N	N	N	N	1----Control
8	7797	6	F	29D	P	79.97	0.18	2.07	*	N	N	N	3	3	6-100mg/kg/day	
9	7777	6	F	29D	P	76.12	0.25	1.70	P	N	N	N	1	N	6-100mg/kg/day	
10	7785	6	F	29D	P	82.93	0.27	3.21	P	N	N	N	3	N	6-100mg/kg/day	
11	7764	5	F	29D	P	72.17	0.44	1.73	*	*	*	N	*	N	N	5-30mg/kg/day
12	7716	3	F	29D	P	131.20	0.49	1.98	P	N	N	N	N	N	N	3-1.0mg/kg/day
13	7672	1	F	29D	P	67.03	0.51	1.47	*	*	*	*	N	N	N	1----Control
14	7791	6	F	29D	P	132.61	0.56	3.11	P	N	N	N	3	N	6-100mg/kg/day	
15	7705	3	F	29D	P	69.45	0.57	2.19	*	N	*	N	N	N	N	3-1.0mg/kg/day
16	7796	6	F	29D	P	117.10	0.60	1.77	P	N	N	N	2	*	6-100mg/kg/day	
17	7750	4	F	29D	P	108.74	0.64	2.03	*	N	N	N	*	N	N	4--10mg/kg/day
18	7788	6	F	29D	P	64.88	0.66	1.84	P	N	N	N	*	N	N	6-100mg/kg/day
19	7736	4	F	29D	P	142.11	0.66	1.84	P	N	N	N	*	N	N	4--10mg/kg/day
20	7754	5	F	29D	P	71.75	0.67	1.82	*	N	*	N	*	N	N	5-30mg/kg/day
21	7778	6	F	29D	P	78.30	0.70	2.18	P	N	N	N	2	N	N	6-100mg/kg/day
22	7666	1	F	29D	P	167.78	0.71	2.18	*	N	N	N	N	N	N	1----Control
23	7725	3	F	29D	P	122.56	0.73	1.58	P	N	N	*	N	N	N	3-1.0mg/kg/day
24	7775	5	F	29D	P	95.21	0.74	1.94	P	N	N	N	2	N	N	5-30mg/kg/day
25	7798	6	F	29D	P	99.82	0.77	2.01	P	N	N	N	*	*	N	6-100mg/kg/day
26	7704	3	F	29D	P	119.09	0.78	1.82	*	N	*	N	N	N	N	3-1.0mg/kg/day
27	7759	5	F	29D	P	101.88	0.79	2.22	P	N	2	N	*	N	N	5-30mg/kg/day
28	7763	5	F	29D	P	109.51	0.80	2.01	*	*	*	N	*	N	N	5-30mg/kg/day
29	7702	3	F	29D	P	99.31	0.81	1.90	*	N	4	N	N	N	N	3-1.0mg/kg/day
30	7735	4	F	29D	P	112.65	0.82	1.71	P	N	1	N	*	N	N	4--10mg/kg/day
31	7779	6	F	29D	P	123.56	0.88	1.86	P	N	N	N	*	N	N	6-100mg/kg/day
32	7753	5	F	29D	P	96.60	0.92	2.28	P	N	*	N	1	N	N	5-30mg/kg/day
33	7706	3	F	29D	P	70.74	0.94	1.78	*	N	*	N	1	N	N	3-1.0mg/kg/day
34	7701	3	F	29D	P	72.61	0.95	1.81	P	N	*	N	N	N	N	3-1.0mg/kg/day
35	7675	1	F	29D	P	66.92	0.95	1.76	*	*	*	1	N	N	N	1----Control
36	7719	3	F	29D	P	79.64	0.96	1.69	P	N	N	N	N	N	N	3-1.0mg/kg/day
37	7708	3	F	29D	P	65.66	0.98	2.38	*	N	*	N	N	N	N	3-1.0mg/kg/day
38	7703	3	F	29D	P	104.72	1.04	1.88	*	N	*	N	N	N	N	3-1.0mg/kg/day
39	7722	3	F	29D	P	104.53	1.07	2.91	*	N	*	N	N	N	N	3-1.0mg/kg/day
40	7693	2	F	29D	P	154.84	1.07	1.92	*	N	N	N	N	N	N	2-0.1mg/kg/day
41	7658	1	F	29D	P	100.28	1.09	2.11	P	*	N	N	N	N	N	1----Control
42	7769	5	F	29D	P	135.85	1.10	2.03	P	*	*	N	2	N	N	5-30mg/kg/day
43	7709	3	F	29D	P	179.52	1.11	2.59	P	N	*	N	N	N	N	3-1.0mg/kg/day
44	7772	5	F	29D	P	130.45	1.11	2.06	*	N	N	N	*	N	N	5-30mg/kg/day
45	7727	4	F	29D	P	99.79	1.14	1.94	*	N	*	N	*	N	N	4--10mg/kg/day
46	7790	6	F	29D	P	111.29	1.15	2.11	P	N	N	N	1	N	N	6-100mg/kg/day
47	7657	1	F	29D	P	102.26	1.16	1.75	*	N	N	N	N	N	N	1----Control
48	7752	5	F	29D	P	133.18	1.17	2.07	*	N	2	N	*	N	N	5-30mg/kg/day
49	7655	1	F	29D	P	102.63	1.20	1.97	*	*	N	N	N	N	N	1----Control
50	7726	4	F	29D	P	117.54	1.21	2.30	*	N	*	N	*	N	N	4--10mg/kg/day
51	7697	2	F	29D	P	127.35	1.21	1.97	P	N	N	N	N	N	N	2-0.1mg/kg/day
52	7757	5	F	29D	P	106.10	1.25	2.35	P	N	*	N	3	N	N	5-30mg/kg/day
53	7743	4	F	29D	P	148.57	1.26	1.96	P	N	N	N	2	N	N	4--10mg/kg/day
54	7773	5	F	29D	P	88.68	1.26	1.89	*	N	N	N	1	N	N	5-30mg/kg/day
55	7766	5	F	29D	P	207.03	1.27	2.09	P	P	*	N	2	N	N	5-30mg/kg/day

  

OBS	ANIM	DOSE	GENDER	AGE	PREGSTAT	T3	T4	TSH	CYST	ECTOP	IREGCYST	MONONUC	FOLHYPER	ATROPHY	TRT
56	7755	5	F	29D	P	109.81	1.27	1.48	P	N	*	N	*	N	5-30mg/kg/day
57	7659	1	F	29D	P	98.27	1.29	1.86	P	*	N	N	N	N	1----Control

58	7758	5	F	29D	P	85.39	1.29	1.72	*	N	*	N	*	N	5--30mg/kg/day
59	7680	2	F	29D	P	81.65	1.29	2.28	P	N	N	N	N	N	2-0.1mg/kg/day
60	7732	4	F	29D	P	70.04	1.29	1.82	*	N	2	N	*	N	4--10mg/kg/day
61	7774	5	F	29D	P	103.41	1.30	1.63	P	N	N	N	2	N	5--30mg/kg/day
62	7711	3	F	29D	P	79.66	1.32	1.94	P	N	*	N	N	N	3-1.0mg/kg/day
63	7762	5	F	29D	P	101.51	1.32	2.09	*	*	*	N	3	N	5--30mg/kg/day
64	7784	6	F	29D	P	132.58	1.34	2.07	*	N	N	N	1	N	6-100mg/kg/day
65	7800	6	F	29D	P	131.58	1.35	1.93	P	N	N	N	1	*	6-100mg/kg/day
66	7663	1	F	29D	P	169.24	1.36	2.31	P	N	N	N	N	N	1-----Control
67	7746	4	F	29D	P	123.60	1.40	1.58	P	N	N	N	*	N	4--10mg/kg/day
68	7741	4	F	29D	P	148.19	1.41	2.25	P	N	N	N	*	N	4--10mg/kg/day
69	7744	4	F	29D	P	116.80	1.41	2.18	P	N	N	N	*	N	4--10mg/kg/day
70	7652	1	F	29D	P	90.04	1.41	1.87	P	*	N	N	N	N	1-----Control
71	7787	6	F	29D	P	146.54	1.42	2.03	*	N	N	N	1	N	6-100mg/kg/day
72	7688	2	F	29D	P	113.81	1.43	1.76	P	N	N	N	N	N	2-0.1mg/kg/day
73	7729	4	F	29D	P	92.91	1.44	1.70	P	N	*	N	*	N	4--10mg/kg/day
74	7786	6	F	29D	P	75.24	1.47	2.14	*	N	N	N	3	N	6-100mg/kg/day
75	7749	4	F	29D	P	97.66	1.48	2.08	P	N	N	N	*	N	4--10mg/kg/day
76	7781	6	F	29D	P	100.98	1.48	1.66	*	N	N	N	*	N	6-100mg/kg/day
77	7733	4	F	29D	P	106.42	1.49	1.75	P	N	*	N	2	N	4--10mg/kg/day
78	7728	4	F	29D	P	119.98	1.51	2.43	P	N	*	N	*	N	4--10mg/kg/day
79	7731	4	F	29D	P	112.63	1.51	2.08	*	N	*	N	*	N	4--10mg/kg/day
80	7747	4	F	29D	P	124.28	1.52	1.79	*	N	N	N	1	N	4--10mg/kg/day
81	7756	5	F	29D	P	91.79	1.52	1.91	*	N	*	N	*	N	5--30mg/kg/day
82	7656	1	F	29D	P	93.53	1.53	2.38	P	*	N	N	N	N	1-----Control
83	7765	5	F	29D	P	134.48	1.57	1.81	*	*	*	N	*	N	5--30mg/kg/day
84	7740	4	F	29D	P	146.20	1.58	2.20	*	N	N	N	2	N	4--10mg/kg/day
85	7789	6	F	29D	P	179.77	1.58	2.17	*	N	N	N	1	N	6-100mg/kg/day
86	7677	2	F	29D	P	84.52	1.59	1.64	P	N	N	N	N	N	2-0.1mg/kg/day
87	7695	2	F	29D	P	206.18	1.60	1.97	*	N	N	N	N	N	2-0.1mg/kg/day
88	7679	2	F	29D	P	77.74	1.61	2.57	*	N	N	N	N	N	2-0.1mg/kg/day
89	7799	6	F	29D	P	117.44	1.61	1.66	*	N	N	N	1	*	6-100mg/kg/day
90	7723	3	F	29D	P	80.41	1.62	1.82	*	N	N	N	*	N	3-1.0mg/kg/day
91	7793	6	F	29D	P	190.48	1.62	1.74	*	N	N	N	1	N	6-100mg/kg/day
92	7783	6	F	29D	P	77.51	1.63	1.87	*	N	N	N	*	N	6-100mg/kg/day
93	7748	4	F	29D	P	179.04	1.68	1.92	P	N	N	N	*	N	4--10mg/kg/day
94	7674	1	F	29D	P	161.62	1.73	2.09	P	*	*	*	*	N	1-----Control
95	7720	3	F	29D	P	149.96	1.76	1.79	*	N	N	N	N	N	3-1.0mg/kg/day
96	7792	6	F	29D	P	186.46	1.77	2.37	P	N	N	N	*	N	6-100mg/kg/day
97	7681	2	F	29D	P	132.04	1.80	1.76	*	N	N	N	N	N	2-0.1mg/kg/day
98	7715	3	F	29D	P	153.06	1.80	1.89	P	N	N	N	N	N	3-1.0mg/kg/day
99	7738	4	F	29D	P	200.93	1.83	2.44	P	N	N	N	1	N	4--10mg/kg/day
100	7734	4	F	29D	P	122.99	1.84	2.52	P	N	*	N	*	N	4--10mg/kg/day
101	7691	2	F	29D	P	119.67	1.88	2.13	*	N	N	N	N	N	2-0.1mg/kg/day
102	7782	6	F	29D	P	151.90	1.88	2.06	*	N	N	N	1	N	6-100mg/kg/day
103	7689	2	F	29D	P	151.32	1.92	2.01	P	N	N	N	N	N	2-0.1mg/kg/day
104	7686	2	F	29D	P	108.50	1.92	1.90	*	N	N	N	N	N	2-0.1mg/kg/day
105	7718	3	F	29D	P	114.24	1.92	2.34	P	N	N	N	N	N	3-1.0mg/kg/day
106	7676	2	F	29D	P	125.12	1.93	1.52	*	N	N	N	N	N	2-0.1mg/kg/day
107	7742	4	F	29D	P	154.52	1.97	2.07	P	N	N	N	*	N	4--10mg/kg/day
108	7780	6	F	29D	P	165.22	1.97	2.25	P	N	N	N	*	N	6-100mg/kg/day
109	7692	2	F	29D	P	136.06	1.97	3.06	P	N	N	N	N	N	2-0.1mg/kg/day
110	7678	2	F	29D	P	146.34	2.00	2.25	*	N	N	N	N	N	2-0.1mg/kg/day

## ORIGINAL RABBIT DEVELOPMENTAL DATA SET FOR ALL THYROID VARIABLES

12:26 Monday, November 2, 1998 3

OBS	ANIM	DOSE	GENDER	AGE	PREGSTAT	T3	T4	TSH	CYST	ECTOP	IREGCYST	MONONUC	FOLHYPER	ATROPHY	TRT
111	7687	2	F	29D	P	112.87	2.04	2.06	*	N	N	N	N	N	2-0.1mg/kg/day
112	7683	2	F	29D	P	101.12	2.04	1.58	P	N	N	N	N	N	2-0.1mg/kg/day
113	7794	6	F	29D	P	282.17	2.06	2.33	*	N	N	N	1	N	6-100mg/kg/day
114	7694	2	F	29D	P	135.92	2.08	2.34	*	N	N	N	N	N	2-0.1mg/kg/day
115	7661	1	F	29D	P	146.27	2.10	2.21	*	N	N	N	N	N	1-----Control

116	7690	2	F	29D	P	164.27	2.11	2.42	*	N	N	N	N	N	2-0.1mg/kg/day
117	7669	1	F	29D	P	151.43	2.15	2.19	P	N	N	N	N	N	1-----Control
118	7707	3	F	29D	P	80.83	2.16	1.85	P	N	*	N	N	N	3-1.0mg/kg/day
119	7651	1	F	29D	P	118.56	2.16	2.77	*	*	N	N	N	N	1-----Control
120	7737	4	F	29D	P	160.59	2.18	1.92	*	N	N	N	*	N	4-10mg/kg/day
121	7730	4	F	29D	P	76.46	2.19	1.87	P	N	*	N	*	N	4-10mg/kg/day
122	7761	5	F	29D	P	145.38	2.21	1.77	*	*	2	N	*	N	5-30mg/kg/day
123	7717	3	F	29D	P	123.82	2.21	2.18	P	N	N	N	N	N	3-1.0mg/kg/day
124	7770	5	F	29D	P	211.19	2.23	1.73	P	*	*	N	*	N	5-30mg/kg/day
125	7670	1	F	29D	P	139.91	2.26	1.74	*	N	N	N	N	N	1-----Control
126	7710	3	F	29D	P	81.95	2.30	2.44	P	N	*	N	N	N	3-1.0mg/kg/day
127	7768	5	F	29D	P	205.05	2.33	2.05	P	*	*	N	3	N	5-30mg/kg/day
128	7698	2	F	29D	P	196.72	2.35	1.89	P	N	N	N	N	N	2-0.1mg/kg/day
129	7767	5	F	29D	P	196.22	2.35	2.01	*	*	N	3	N	5-30mg/kg/day	
130	7713	3	F	29D	P	110.12	2.39	2.09	*	N	N	N	N	N	3-1.0mg/kg/day
131	7685	2	F	29D	P	134.39	2.41	2.03	P	N	N	N	N	N	2-0.1mg/kg/day
132	7760	5	F	29D	P	152.59	2.59	1.85	P	N	*	N	*	N	5-30mg/kg/day
133	7664	1	F	29D	P	164.10	2.59	2.20	*	N	N	N	N	N	1-----Control
134	7668	1	F	29D	P	165.72	2.70	2.03	*	N	N	N	N	N	1-----Control
135	7696	2	F	29D	P	159.22	2.77	2.06	P	N	N	N	N	N	2-0.1mg/kg/day
136	7714	3	F	29D	P	131.88	2.78	2.00	P	N	N	N	N	N	3-1.0mg/kg/day
137	7654	1	F	29D	P	179.26	2.80	1.90	P	*	N	N	N	N	1-----Control
138	7673	1	F	29D	P	209.30	2.84	2.69	*	*	2	*	N	N	1-----Control
139	7751	5	F	29D	P	88.03	2.94	1.97	*	N	*	N	2	N	5-30mg/kg/day
140	7682	2	F	29D	P	126.67	2.97	1.85	*	N	N	N	N	N	2-0.1mg/kg/day
141	7745	4	F	29D	P	180.07	2.97	1.68	P	N	N	N	1	N	4-10mg/kg/day
142	7662	1	F	29D	P	213.18	2.99	2.55	*	N	N	N	N	N	1-----Control
143	7665	1	F	29D	P	168.41	3.18	2.06	*	N	N	N	N	N	1-----Control
144	7712	3	F	29D	P	209.82	3.19	2.36	*	N	N	N	N	N	3-1.0mg/kg/day
145	7667	1	F	29D	P	180.64	3.51	2.39	P	N	N	N	N	N	1-----Control
146	7699	2	F	29D	P	194.76	3.67	1.87	P	N	N	N	N	N	2-0.1mg/kg/day
147	7684	2	F	29D	P	132.28	4.07	2.02	*	N	N	N	N	N	2-0.1mg/kg/day
148	7721	3	F	29D	P	.	.	.	P	N	N	*	N	N	3-1.0mg/kg/day
149	7776	6	F	29D	P	.	.	.	*	N	N	*	N	N	6-100mg/kg/day
150	7724	3	F	29D	P	.	.	.	P	N	N	1	N	N	3-1.0mg/kg/day

1	OBS	ANIM	DOSE	GENDER	AGE	PREGSTAT	RABBIT DEVELOPMENTAL DATA		SET	FINAL DATA SET FOR OUTPUT				12:26 Monday, November 2, 1998	
							T3	T4		TSN	CYST	ECTOP	IREGCYST	MONONUC	FOLHYPER
1	7771	5	F	29D	NP	143.17	1.01	1.38	1	0	0	0	1	0	5-30mg/kg/day
2	7739	4	F	29D	NP	180.61	1.92	1.93	0	0	0	0	0	0	4-10mg/kg/day
3	7660	1	F	29D	NP	159.94	0.57	1.73	1	1	0	0	0	0	1-----Control
4	7795	6	F	29D	NP	153.89	0.86	2.07	0	0	0	0	0	0	6-100mg/kg/day
5	7700	2	F	29D	NP	179.83	2.29	1.69	1	0	0	0	0	0	2-0.1mg/kg/day
6	7671	1	F	29D	NP	224.04	2.07	2.42	0	1	0	0	0	0	1-----Control
7	7653	1	F	29D	NP	162.82	1.98	1.77	0	0	0	0	0	0	1-----Control
8	7797	6	F	29D	P	79.97	0.18	2.07	0	0	0	0	3	3	6-100mg/kg/day
9	7777	6	F	29D	P	76.12	0.25	1.70	1	0	0	0	1	0	6-100mg/kg/day
10	7785	6	F	29D	P	82.93	0.27	3.21	1	0	0	0	3	0	6-100mg/kg/day
11	7764	5	F	29D	P	72.17	0.44	1.73	0	0	0	0	0	0	5-30mg/kg/day
12	7716	3	F	29D	P	131.20	0.49	1.98	1	0	0	0	0	0	3-1.0mg/kg/day
13	7672	1	F	29D	P	67.03	0.51	1.47	0	0	0	0	0	0	1-----Control
14	7791	6	F	29D	P	132.61	0.56	3.11	1	0	0	0	3	0	6-100mg/kg/day
15	7705	3	F	29D	P	69.45	0.57	2.19	0	0	0	0	0	0	3-1.0mg/kg/day
16	7796	6	F	29D	P	117.10	0.60	1.77	1	0	0	0	2	0	6-100mg/kg/day
17	7750	4	F	29D	P	108.74	0.64	2.03	0	0	0	0	0	0	4-10mg/kg/day
18	7788	6	F	29D	P	64.88	0.66	1.84	1	0	0	0	0	0	6-100mg/kg/day
19	7736	4	F	29D	P	142.11	0.66	1.84	1	0	0	0	0	0	4-10mg/kg/day
20	7754	5	F	29D	P	71.75	0.67	1.82	0	0	0	0	0	0	5-30mg/kg/day
21	7778	6	F	29D	P	78.30	0.70	2.18	1	0	0	0	2	0	6-100mg/kg/day
22	7666	1	F	29D	P	167.78	0.71	2.18	0	0	0	0	0	0	1-----Control
23	7725	3	F	29D	P	122.56	0.73	1.58	1	0	0	0	0	0	3-1.0mg/kg/day
24	7775	5	F	29D	P	95.21	0.74	1.94	1	0	0	0	2	0	5-30mg/kg/day
25	7798	6	F	29D	P	99.82	0.77	2.01	1	0	0	0	0	0	6-100mg/kg/day
26	7704	3	F	29D	P	119.09	0.78	1.82	0	0	0	0	0	0	3-1.0mg/kg/day



88	7679	2	F	29D	P	77.74	1.61	2.57	0	0	0	0	0	0	2-0.1mg/kg/day
89	7799	6	F	29D	P	117.44	1.61	1.66	0	0	0	0	1	0	6-100mg/kg/day
90	7723	3	F	29D	P	80.41	1.62	1.82	0	0	0	0	0	0	3-1.0mg/kg/day
91	7793	6	F	29D	P	190.48	1.62	1.74	0	0	0	0	1	0	6-100mg/kg/day
92	7783	6	F	29D	P	77.51	1.63	1.87	0	0	0	0	0	0	6-100mg/kg/day
93	7748	4	F	29D	P	179.04	1.68	1.92	1	0	0	0	0	0	4--10mg/kg/day
94	7674	1	F	29D	P	161.62	1.73	2.09	1	0	0	0	0	0	1-----Control
95	7720	3	F	29D	P	149.96	1.76	1.79	0	0	0	0	0	0	3-1.0mg/kg/day
96	7792	6	F	29D	P	186.46	1.77	2.37	1	0	0	0	0	0	6-100mg/kg/day
97	7681	2	F	29D	P	132.04	1.80	1.76	0	0	0	0	0	0	2-0.1mg/kg/day
98	7715	3	F	29D	P	153.06	1.80	1.89	1	0	0	0	0	0	3-1.0mg/kg/day
99	7738	4	F	29D	P	200.93	1.83	2.44	1	0	0	0	1	0	4--10mg/kg/day
100	7734	4	F	29D	P	122.99	1.84	2.52	1	0	0	0	0	0	4--10mg/kg/day
101	7691	2	F	29D	P	119.67	1.88	2.13	0	0	0	0	0	0	2-0.1mg/kg/day
102	7782	6	F	29D	P	151.90	1.88	2.06	0	0	0	0	1	0	6-100mg/kg/day
103	7689	2	F	29D	P	151.32	1.92	2.01	1	0	0	0	0	0	2-0.1mg/kg/day
104	7686	2	F	29D	P	108.50	1.92	1.90	0	0	0	0	0	0	2-0.1mg/kg/day
105	7718	3	F	29D	P	114.24	1.92	2.34	1	0	0	0	0	0	3-1.0mg/kg/day
106	7676	2	F	29D	P	125.12	1.93	1.52	0	0	0	0	0	0	2-0.1mg/kg/day
107	7742	4	F	29D	P	154.52	1.97	2.07	1	0	0	0	0	0	4--10mg/kg/day
108	7780	6	F	29D	P	165.22	1.97	2.25	1	0	0	0	0	0	6-100mg/kg/day
109	7692	2	F	29D	P	136.06	1.97	3.06	1	0	0	0	0	0	2-0.1mg/kg/day
110	7678	2	F	29D	P	146.34	2.00	2.25	0	0	0	0	0	0	2-0.1mg/kg/day
111	7687	2	F	29D	P	112.87	2.04	2.06	0	0	0	0	0	0	2-0.1mg/kg/day
112	7683	2	F	29D	P	101.12	2.04	1.58	1	0	0	0	0	0	2-0.1mg/kg/day

## RABBIT DEVELOPMENTAL DATA SET - FINAL DATA SET FOR OUTPUT

12:26 Monday, November 2, 1998

6

OBS	ANIM	DOSE	GENDER	AGE	PREGSTAT	T3	T4	TSH	CYST	ECTOP	IREGCYST	MONONUC	FOLHYPER	ATROPHY	TRT
113	7794	6	F	29D	P	282.17	2.06	2.33	0	0	0	0	1	0	6-100mg/kg/day
114	7694	2	F	29D	P	135.92	2.08	2.34	0	0	0	0	0	0	2-0.1mg/kg/day
115	7661	1	F	29D	P	146.27	2.10	2.21	0	0	0	0	0	0	1-----Control
116	7690	2	F	29D	P	164.27	2.11	2.42	0	0	0	0	0	0	2-0.1mg/kg/day
117	7669	1	F	29D	P	151.43	2.15	2.19	1	0	0	0	0	0	1-----Control
118	7707	3	F	29D	P	80.83	2.16	1.85	1	0	0	0	0	0	3-1.0mg/kg/day
119	7651	1	F	29D	P	118.56	2.16	2.77	0	0	0	0	0	0	1-----Control
120	7737	4	F	29D	P	160.59	2.18	1.92	0	0	0	0	0	0	4--10mg/kg/day
121	7730	4	F	29D	P	76.46	2.19	1.87	1	0	0	0	0	0	4--10mg/kg/day
122	7761	5	F	29D	P	145.38	2.21	1.77	0	0	2	0	0	0	5--30mg/kg/day
123	7717	3	F	29D	P	123.82	2.21	2.18	1	0	0	0	0	0	3-1.0mg/kg/day
124	7770	5	F	29D	P	211.19	2.23	1.73	1	0	0	0	0	0	5--30mg/kg/day
125	7670	1	F	29D	P	139.91	2.26	1.74	0	0	0	0	0	0	1-----Control
126	7710	3	F	29D	P	81.95	2.30	2.44	1	0	0	0	0	0	3-1.0mg/kg/day
127	7768	5	F	29D	P	205.05	2.33	2.05	1	0	0	0	3	0	5--30mg/kg/day
128	7698	2	F	29D	P	196.72	2.35	1.89	1	0	0	0	0	0	2-0.1mg/kg/day
129	7767	5	F	29D	P	196.22	2.35	2.01	0	0	0	0	3	0	5--30mg/kg/day
130	7713	3	F	29D	P	110.12	2.39	2.09	0	0	0	0	0	0	3-1.0mg/kg/day
131	7685	2	F	29D	P	134.39	2.41	2.03	1	0	0	0	0	0	2-0.1mg/kg/day
132	7760	5	F	29D	P	152.59	2.59	1.85	1	0	0	0	0	0	5--30mg/kg/day
133	7664	1	F	29D	P	164.10	2.59	2.20	0	0	0	0	0	0	1-----Control
134	7668	1	F	29D	P	165.72	2.70	2.03	0	0	0	0	0	0	1-----Control
135	7696	2	F	29D	P	159.22	2.77	2.06	1	0	0	0	0	0	2-0.1mg/kg/day
136	7714	3	F	29D	P	131.88	2.78	2.00	1	0	0	0	0	0	3-1.0mg/kg/day
137	7654	1	F	29D	P	179.26	2.80	1.90	1	0	0	0	0	0	1-----Control
138	7673	1	F	29D	P	209.30	2.84	2.69	0	0	2	0	0	0	1-----Control
139	7751	5	F	29D	P	88.03	2.94	1.97	0	0	0	0	2	0	5--30mg/kg/day
140	7682	2	F	29D	P	126.67	2.97	1.85	0	0	0	0	0	0	2-0.1mg/kg/day
141	7745	4	F	29D	P	180.07	2.97	1.68	1	0	0	0	1	0	4--10mg/kg/day
142	7662	1	F	29D	P	213.18	2.99	2.55	0	0	0	0	0	0	1-----Control
143	7665	1	F	29D	P	168.41	3.18	2.06	0	0	0	0	0	0	1-----Control
144	7712	3	F	29D	P	209.82	3.19	2.36	0	0	0	0	0	0	3-1.0mg/kg/day
145	7667	1	F	29D	P	180.64	3.51	2.39	1	0	0	0	0	0	1-----Control
146	7699	2	F	29D	P	194.76	3.67	1.87	1	0	0	0	0	0	2-0.1mg/kg/day

147	7684	2	F	29D	P	132.28	4.07	2.02	0	0	0	0	0	0	2-0.1mg/kg/day
148	7721	3	F	29D	P	.	.	.	1	0	0	0	0	0	3-1.0mg/kg/day
149	7776	6	F	29D	P	.	.	.	0	0	0	0	0	0	6-100mg/kg/day
150	7724	3	F	29D	P	.	.	.	1	0	0	1	0	0	3-1.0mg/kg/day

## 1 RABBIT DEVELOPMENTAL DATA SET - FINAL DATA SET FOR ANALYSES

12:26 Monday, November 2, 1998

7

OBS	ANIM	TRT	PREGSTAT	T3	T4	TSH	CYST	ECTOP	IREGCYST	MONOMUC	FOLHYPER	ATROPHY
1	7660	1-----Control	NP	159.94	0.57	1.73	1	1	0	0	0	0
2	7671	1-----Control	NP	224.04	2.07	2.42	0	1	0	0	0	0
3	7653	1-----Control	NP	162.82	1.98	1.77	0	0	0	0	0	0
4	7700	2-0.1mg/kg/day	NP	179.83	2.29	1.69	1	0	0	0	0	0
5	7739	4--10mg/kg/day	NP	180.61	1.92	1.93	0	0	0	0	0	0
6	7771	5--30mg/kg/day	NP	143.17	1.01	1.38	1	0	0	0	1	0
7	7795	6-100mg/kg/day	NP	153.89	0.86	2.07	0	0	0	0	0	0
8	7672	1-----Control	P	67.03	0.51	1.47	0	0	0	0	0	0
9	7666	1-----Control	P	167.78	0.71	2.18	0	0	0	0	0	0
10	7675	1-----Control	P	66.92	0.95	1.76	0	0	0	1	0	0
11	7658	1-----Control	P	100.28	1.09	2.11	1	0	0	0	0	0
12	7657	1-----Control	P	102.26	1.16	1.75	0	0	0	0	0	0
13	7655	1-----Control	P	102.63	1.20	1.97	0	0	0	0	0	0
14	7659	1-----Control	P	98.27	1.29	1.86	1	0	0	0	0	0
15	7663	1-----Control	P	169.24	1.36	2.31	1	0	0	0	0	0
16	7652	1-----Control	P	90.04	1.41	1.87	1	0	0	0	0	0
17	7656	1-----Control	P	93.53	1.53	2.38	1	0	0	0	0	0
18	7674	1-----Control	P	161.62	1.73	2.09	1	0	0	0	0	0
19	7661	1-----Control	P	146.27	2.10	2.21	0	0	0	0	0	0
20	7669	1-----Control	P	151.43	2.15	2.19	1	0	0	0	0	0
21	7651	1-----Control	P	118.56	2.16	2.77	0	0	0	0	0	0
22	7670	1-----Control	P	139.91	2.26	1.74	0	0	0	0	0	0
23	7664	1-----Control	P	164.10	2.59	2.20	0	0	0	0	0	0
24	7668	1-----Control	P	165.72	2.70	2.03	0	0	0	0	0	0
25	7654	1-----Control	P	179.26	2.80	1.90	1	0	0	0	0	0
26	7673	1-----Control	P	209.30	2.84	2.69	0	0	2	0	0	0
27	7662	1-----Control	P	213.18	2.99	2.55	0	0	0	0	0	0
28	7665	1-----Control	P	168.41	3.18	2.06	0	0	0	0	0	0
29	7667	1-----Control	P	180.64	3.51	2.39	1	0	0	0	0	0
30	7693	2-0.1mg/kg/day	P	154.84	1.07	1.92	0	0	0	0	0	0
31	7697	2-0.1mg/kg/day	P	127.35	1.21	1.97	1	0	0	0	0	0
32	7680	2-0.1mg/kg/day	P	81.65	1.29	2.28	1	0	0	0	0	0
33	7688	2-0.1mg/kg/day	P	113.81	1.43	1.76	1	0	0	0	0	0
34	7677	2-0.1mg/kg/day	P	84.52	1.59	1.64	1	0	0	0	0	0
35	7695	2-0.1mg/kg/day	P	206.18	1.60	1.97	0	0	0	0	0	0
36	7679	2-0.1mg/kg/day	P	77.74	1.61	2.57	0	0	0	0	0	0
37	7681	2-0.1mg/kg/day	P	132.04	1.80	1.76	0	0	0	0	0	0
38	7691	2-0.1mg/kg/day	P	119.67	1.88	2.13	0	0	0	0	0	0
39	7689	2-0.1mg/kg/day	P	151.32	1.92	2.01	1	0	0	0	0	0
40	7686	2-0.1mg/kg/day	P	108.50	1.92	1.90	0	0	0	0	0	0
41	7676	2-0.1mg/kg/day	P	125.12	1.93	1.52	0	0	0	0	0	0
42	7692	2-0.1mg/kg/day	P	136.06	1.97	3.06	1	0	0	0	0	0
43	7678	2-0.1mg/kg/day	P	146.34	2.00	2.25	0	0	0	0	0	0
44	7687	2-0.1mg/kg/day	P	112.87	2.04	2.06	0	0	0	0	0	0
45	7683	2-0.1mg/kg/day	P	101.12	2.04	1.58	1	0	0	0	0	0
46	7694	2-0.1mg/kg/day	P	135.92	2.08	2.34	0	0	0	0	0	0
47	7690	2-0.1mg/kg/day	P	164.27	2.11	2.42	0	0	0	0	0	0
48	7698	2-0.1mg/kg/day	P	196.72	2.35	1.89	1	0	0	0	0	0
49	7685	2-0.1mg/kg/day	P	134.39	2.41	2.03	1	0	0	0	0	0
50	7696	2-0.1mg/kg/day	P	159.22	2.77	2.06	1	0	0	0	0	0
51	7682	2-0.1mg/kg/day	P	126.67	2.97	1.85	0	0	0	0	0	0
52	7699	2-0.1mg/kg/day	P	194.76	3.67	1.87	1	0	0	0	0	0
53	7684	2-0.1mg/kg/day	P	132.28	4.07	2.02	0	0	0	0	0	0
54	7716	3-1.0mg/kg/day	P	131.20	0.49	1.98	1	0	0	0	0	0
55	7705	3-1.0mg/kg/day	P	69.45	0.57	2.19	0	0	0	0	0	0

## 1 RABBIT DEVELOPMENTAL DATA SET - FINAL DATA SET FOR ANALYSES

8

12:26 Monday, November 2, 1998

OBS	ANIM	TRT	PREGSTAT	T3	T4	TSH	CYST	ECTOP	IREGCYST	MONONUC	FOLHYPER	ATROPHY
56	7725	3-1.0mg/kg/day	P	122.56	0.73	1.58	1	0	0	0	0	0
57	7704	3-1.0mg/kg/day	P	119.09	0.78	1.82	0	0	0	0	0	0
58	7702	3-1.0mg/kg/day	P	99.31	0.81	1.90	0	0	4	0	0	0
59	7706	3-1.0mg/kg/day	P	70.74	0.94	1.78	0	0	0	0	0	0
60	7701	3-1.0mg/kg/day	P	72.61	0.95	1.81	1	0	0	0	0	0
61	7719	3-1.0mg/kg/day	P	79.64	0.96	1.69	1	0	0	0	0	0
62	7708	3-1.0mg/kg/day	P	65.66	0.98	2.38	0	0	0	0	0	0
63	7703	3-1.0mg/kg/day	P	104.72	1.04	1.88	0	0	0	0	0	0
64	7722	3-1.0mg/kg/day	P	104.53	1.07	2.91	0	0	0	0	0	0
65	7709	3-1.0mg/kg/day	P	179.52	1.11	2.59	1	0	0	0	0	0
66	7711	3-1.0mg/kg/day	P	79.66	1.32	1.94	1	0	0	0	0	0
67	7723	3-1.0mg/kg/day	P	80.41	1.62	1.82	0	0	0	0	0	0
68	7720	3-1.0mg/kg/day	P	149.96	1.76	1.79	0	0	0	0	0	0
69	7715	3-1.0mg/kg/day	P	153.06	1.80	1.89	1	0	0	0	0	0
70	7718	3-1.0mg/kg/day	P	114.24	1.92	2.34	1	0	0	0	0	0
71	7707	3-1.0mg/kg/day	P	80.83	2.16	1.85	1	0	0	0	0	0
72	7717	3-1.0mg/kg/day	P	123.82	2.21	2.18	1	0	0	0	0	0
73	7710	3-1.0mg/kg/day	P	81.95	2.30	2.44	1	0	0	0	0	0
74	7713	3-1.0mg/kg/day	P	110.12	2.39	2.09	0	0	0	0	0	0
75	7714	3-1.0mg/kg/day	P	131.88	2.78	2.00	1	0	0	0	0	0
76	7712	3-1.0mg/kg/day	P	209.82	3.19	2.36	0	0	0	0	0	0
77	7721	3-1.0mg/kg/day	P	.	.	.	1	0	0	0	0	0
78	7724	3-1.0mg/kg/day	P	.	.	.	1	0	0	1	0	0
79	7750	4--10mg/kg/day	P	108.74	0.64	2.03	0	0	0	0	0	0
80	7736	4--10mg/kg/day	P	142.11	0.66	1.84	1	0	0	0	0	0
81	7735	4--10mg/kg/day	P	112.65	0.82	1.71	1	0	1	0	0	0
82	7727	4--10mg/kg/day	P	99.79	1.14	1.94	0	0	0	0	0	0
83	7726	4--10mg/kg/day	P	117.54	1.21	2.30	0	0	0	0	0	0
84	7743	4--10mg/kg/day	P	148.57	1.26	1.96	1	0	0	0	2	0
85	7732	4--10mg/kg/day	P	70.04	1.29	1.82	0	0	2	0	0	0
86	7746	4--10mg/kg/day	P	123.60	1.40	1.58	1	0	0	0	0	0
87	7741	4--10mg/kg/day	P	148.19	1.41	2.25	1	0	0	0	0	0
88	7744	4--10mg/kg/day	P	116.80	1.41	2.18	1	0	0	0	0	0
89	7729	4--10mg/kg/day	P	92.91	1.44	1.70	1	0	0	0	0	0
90	7749	4--10mg/kg/day	P	97.66	1.48	2.08	1	0	0	0	0	0
91	7733	4--10mg/kg/day	P	106.42	1.49	1.75	1	0	0	0	2	0
92	7728	4--10mg/kg/day	P	119.98	1.51	2.43	1	0	0	0	0	0
93	7731	4--10mg/kg/day	P	112.63	1.51	2.08	0	0	0	0	0	0
94	7747	4--10mg/kg/day	P	124.28	1.52	1.79	0	0	0	0	1	0
95	7740	4--10mg/kg/day	P	146.20	1.58	2.20	0	0	0	0	2	0
96	7748	4--10mg/kg/day	P	179.04	1.68	1.92	1	0	0	0	0	0
97	7738	4--10mg/kg/day	P	200.93	1.83	2.44	1	0	0	0	1	0
98	7734	4--10mg/kg/day	P	122.99	1.84	2.52	1	0	0	0	0	0
99	7742	4--10mg/kg/day	P	154.52	1.97	2.07	1	0	0	0	0	0
100	7737	4--10mg/kg/day	P	160.59	2.18	1.92	0	0	0	0	0	0
101	7730	4--10mg/kg/day	P	76.46	2.19	1.87	1	0	0	0	0	0
102	7745	4--10mg/kg/day	P	180.07	2.97	1.68	1	0	0	0	1	0
103	7764	5--30mg/kg/day	P	72.17	0.44	1.73	0	0	0	0	0	0
104	7754	5--30mg/kg/day	P	71.75	0.67	1.82	0	0	0	0	0	0
105	7775	5--30mg/kg/day	P	95.21	0.74	1.94	1	0	0	0	2	0
106	7759	5--30mg/kg/day	P	101.88	0.79	2.22	1	0	2	0	0	0
107	7763	5--30mg/kg/day	P	109.51	0.80	2.01	0	0	0	0	0	0
108	7753	5--30mg/kg/day	P	96.60	0.92	2.28	1	0	0	0	1	0
109	7769	5--30mg/kg/day	P	135.85	1.10	2.03	1	0	0	0	2	0
110	7772	5--30mg/kg/day	P	130.45	1.11	2.06	0	0	0	0	0	0

## RABBIT DEVELOPMENTAL DATA SET - FINAL DATA SET FOR ANALYSES

12:26 Monday, November 2, 1998  
9

OBS	ANIM	TRT	PREGSTAT	T3	T4	TSH	CYST	ECTOP	IREGCYST	MONONUC	FOLHYPER	ATROPHY
111	7752	5--30mg/kg/day	P	133.18	1.17	2.07	0	0	2	0	0	0

112	7757	5--30mg/kg/day	P	106.10	1.25	2.35	1	0	0	0	3
113	7773	5--30mg/kg/day	P	88.68	1.26	1.89	0	0	0	0	1
114	7766	5--30mg/kg/day	P	207.03	1.27	2.09	1	1	0	0	2
115	7755	5--30mg/kg/day	P	109.81	1.27	1.48	1	0	0	0	0
116	7758	5--30mg/kg/day	P	85.39	1.29	1.72	0	0	0	0	0
117	7774	5--30mg/kg/day	P	103.41	1.30	1.63	1	0	0	0	2
118	7762	5--30mg/kg/day	P	101.51	1.32	2.09	0	0	0	0	3
119	7756	5--30mg/kg/day	P	91.79	1.52	1.91	0	0	0	0	0
120	7765	5--30mg/kg/day	P	134.48	1.57	1.81	0	0	0	0	0
121	7761	5--30mg/kg/day	P	145.38	2.21	1.77	0	0	2	0	0
122	7770	5--30mg/kg/day	P	211.19	2.23	1.73	1	0	0	0	0
123	7768	5--30mg/kg/day	P	205.05	2.33	2.05	1	0	0	0	3
124	7767	5--30mg/kg/day	P	196.22	2.35	2.01	0	0	0	0	3
125	7760	5--30mg/kg/day	P	152.59	2.59	1.85	1	0	0	0	0
126	7751	5--30mg/kg/day	P	88.03	2.94	1.97	0	0	0	0	2
127	7797	6-100mg/kg/day	P	79.97	0.18	2.07	0	0	0	0	3
128	7777	6-100mg/kg/day	P	76.12	0.25	1.70	1	0	0	0	1
129	7785	6-100mg/kg/day	P	82.93	0.27	3.21	1	0	0	0	3
130	7791	6-100mg/kg/day	P	132.61	0.56	3.11	1	0	0	0	3
131	7796	6-100mg/kg/day	P	117.10	0.60	1.77	1	0	0	0	2
132	7788	6-100mg/kg/day	P	64.88	0.66	1.84	1	0	0	0	0
133	7778	6-100mg/kg/day	P	78.30	0.70	2.18	1	0	0	0	2
134	7798	6-100mg/kg/day	P	99.82	0.77	2.01	1	0	0	0	0
135	7779	6-100mg/kg/day	P	123.56	0.88	1.86	1	0	0	0	0
136	7790	6-100mg/kg/day	P	111.29	1.15	2.11	1	0	0	0	1
137	7784	6-100mg/kg/day	P	132.58	1.34	2.07	0	0	0	0	1
138	7800	6-100mg/kg/day	P	131.58	1.35	1.93	1	0	0	0	1
139	7787	6-100mg/kg/day	P	146.54	1.42	2.03	0	0	0	0	1
140	7786	6-100mg/kg/day	P	75.24	1.47	2.14	0	0	0	0	3
141	7781	6-100mg/kg/day	P	100.98	1.48	1.66	0	0	0	0	0
142	7789	6-100mg/kg/day	P	179.77	1.58	2.17	0	0	0	0	1
143	7799	6-100mg/kg/day	P	117.44	1.61	1.66	0	0	0	0	1
144	7793	6-100mg/kg/day	P	190.48	1.62	1.74	0	0	0	0	1
145	7783	6-100mg/kg/day	P	77.51	1.63	1.87	0	0	0	0	0
146	7792	6-100mg/kg/day	P	186.46	1.77	2.37	1	0	0	0	0
147	7782	6-100mg/kg/day	P	151.90	1.88	2.06	0	0	0	0	1
148	7780	6-100mg/kg/day	P	165.22	1.97	2.25	1	0	0	0	0
149	7794	6-100mg/kg/day	P	282.17	2.06	2.33	0	0	0	0	1
150	7776	6-100mg/kg/day	P	.	.	.	0	0	0	0	0

RABBIT DEVELOPMENTAL DATA - GROUP MEANS BY TREATMENT 12:26 Monday, November 2, 1998 10

RABBIT DEVELOPMENTAL DATA - GROUP MEANS BY TREATMENT

12:26 Monday, November 2, 1998 10

- PREGSTAT=NP TRT=1-----Control

- PREGSTAT=NP TRT=2-0.1mg/kg/day

Variable N Mean Std Error Sum Minimum Maximum Std Dev Variance CV

T3	1	179.8300000	.	179.8300000	179.8300000	179.8300000	.	.	.
T4	1	2.2900000	.	2.2900000	2.2900000	2.2900000	.	.	.
TSH	1	1.6900000	.	1.6900000	1.6900000	1.6900000	.	.	.
CYST	1	1.0000000	.	1.0000000	1.0000000	1.0000000	.	.	.
ECTOP	1	0	.	0	0	0	.	.	.
IREGCYST	1	0	.	0	0	0	.	.	.
MONONUC	1	0	.	0	0	0	.	.	.
FOLHYPER	1	0	.	0	0	0	.	.	.
ATROPHY	1	0	.	0	0	0	.	.	.

----- PREGSTAT=NP TRT=4--10mg/kg/day -----

Variable	N	Mean	Std Error	Sum	Minimum	Maximum	Std Dev	Variance	CV
T3	1	180.6100000	.	180.6100000	180.6100000	180.6100000	.	.	.
T4	1	1.9200000	.	1.9200000	1.9200000	1.9200000	.	.	.
TSH	1	1.9300000	.	1.9300000	1.9300000	1.9300000	.	.	.
CYST	1	0	.	0	0	0	.	.	.
ECTOP	1	0	.	0	0	0	.	.	.
IREGCYST	1	0	.	0	0	0	.	.	.
MONONUC	1	0	.	0	0	0	.	.	.
FOLHYPER	1	0	.	0	0	0	.	.	.
ATROPHY	1	0	.	0	0	0	.	.	.

1 RABBIT DEVELOPMENTAL DATA - GROUP MEANS BY TREATMENT 12:26 Monday, November 2, 1998 11

----- PREGSTAT=NP TRT=5--30mg/kg/day -----

Variable	N	Mean	Std Error	Sum	Minimum	Maximum	Std Dev	Variance	CV
T3	1	143.1700000	.	143.1700000	143.1700000	143.1700000	.	.	.
T4	1	1.0100000	.	1.0100000	1.0100000	1.0100000	.	.	.
TSH	1	1.3800000	.	1.3800000	1.3800000	1.3800000	.	.	.
CYST	1	1.0000000	.	1.0000000	1.0000000	1.0000000	.	.	.
ECTOP	1	0	.	0	0	0	.	.	.
IREGCYST	1	0	.	0	0	0	.	.	.
MONONUC	1	0	.	0	0	0	.	.	.
FOLHYPER	1	1.0000000	.	1.0000000	1.0000000	1.0000000	.	.	.
ATROPHY	1	0	.	0	0	0	.	.	.

----- PREGSTAT=NP TRT=6-100mg/kg/day -----

Variable	N	Mean	Std Error	Sum	Minimum	Maximum	Std Dev	Variance	CV
T3	1	153.8900000	.	153.8900000	153.8900000	153.8900000	.	.	.
T4	1	0.8600000	.	0.8600000	0.8600000	0.8600000	.	.	.
TSH	1	2.0700000	.	2.0700000	2.0700000	2.0700000	.	.	.
CYST	1	0	.	0	0	0	.	.	.
ECTOP	1	0	.	0	0	0	.	.	.
IREGCYST	1	0	.	0	0	0	.	.	.
MONONUC	1	0	.	0	0	0	.	.	.
FOLHYPER	1	0	.	0	0	0	.	.	.
ATROPHY	1	0	.	0	0	0	.	.	.

----- PREGSTAT=P TRT=1----Control -----

RABBIT DEVELOPMENTAL DATA - GROUP MEANS BY TREATMENT 12:26 Monday, November 2, 1998 12

RABBIT DEVELOPMENTAL DATA - GROUP MEANS BY TREATMENT

12:26 Monday, November 2, 1998 12

6

PREGSTAT=P TRT=2-0.1mg/kg/day

PREGSTAT=P TRT=3-1.0mg/kg/day

PREGSTAT=P TRT=4 -- 10mg/kg/day

1

## RABBIT DEVELOPMENTAL DATA - GROUP MEANS BY TREATMENT

12:26 Monday, November 2, 1998 13

----- PREGSTAT=P TRT=5--30mg/kg/day -----

Variable	N	Mean	Std Error	Sum	Minimum	Maximum	Std Dev	Variance	CV
T3	24	123.8858333	8.7380953	2973.26	71.7500000	211.1900000	42.8077498	1832.50	34.5541929
T4	24	1.4350000	0.1352534	34.4400000	0.4400000	2.9400000	0.6626036	0.4390435	46.1744641
TSH	24	1.9379167	0.0422466	46.5100000	1.4800000	2.3500000	0.2069652	0.0428346	10.6797790
CYST	24	0.4583333	0.1038946	11.0000000	0	1.0000000	0.5089774	0.2590580	111.0496097
ECTOP	24	0.0416667	0.0416667	1.0000000	0	1.0000000	0.2041241	0.0416667	489.8979486
IREGCYST	24	0.2500000	0.1379193	6.0000000	0	2.0000000	0.6756639	0.4565217	270.2655699
MONONUC	24	0	0	0	0	0	0	0	.
FOLHYPER	24	1.0000000	0.2481818	24.0000000	0	3.0000000	1.2158375	1.4782609	121.5837518
ATROPHY	24	0	0	0	0	0	0	0	.

----- PREGSTAT=P TRT=6-100mg/kg/day -----

Variable	N	Mean	Std Error	Sum	Minimum	Maximum	Std Dev	Variance	CV
T3	23	126.2804348	10.6068259	2904.45	64.8800000	282.1700000	50.8685500	2587.61	40.2822100
T4	23	1.1826087	0.1212358	27.2000000	0.1800000	2.0600000	0.5814263	0.3380565	49.1647224
TSH	23	2.0930435	0.0822304	48.1400000	1.6600000	3.2100000	0.3943629	0.1555221	18.8416032
CYST	24	0.5000000	0.1042572	12.0000000	0	1.0000000	0.5107539	0.2608696	102.1507837
ECTOP	24	0	0	0	0	0	0	0	.
IREGCYST	24	0	0	0	0	0	0	0	.
MONONUC	24	0	0	0	0	0	0	0	.
FOLHYPER	24	1.0833333	0.2163320	26.0000000	0	3.0000000	1.0598058	1.1231884	97.8282308
ATROPHY	24	0.1250000	0.1250000	3.0000000	0	3.0000000	0.6123724	0.3750000	489.8979486

1

## RABBIT DEVELOPMENTAL DATA THYROID HORMONE DATA

12:26 Monday, November 2, 1998 14

PROC GLM WITH TUKEYS

----- PREGSTAT=NP -----

General Linear Models Procedure  
Class Level Information

Class Levels Values

TRT 5 1----Control 2-0.1mg/kg/day 4--10mg/kg/day 5--30mg/kg/day 6-100mg/kg/day

Number of observations in by group = 7

1

## RABBIT DEVELOPMENTAL DATA THYROID HORMONE DATA

12:26 Monday, November 2, 1998 15

PROC GLM WITH TUKEYS

----- PREGSTAT=NP -----

## General Linear Models Procedure

Dependent Variable: T3

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	4	1610.78247619	402.69561905	0.31	0.8552

Error	2	2621.66426667	1310.83213333			
Corrected Total	6	4232.44674286				
	R-Square	C.V.	Root MSE	T3 Mean		
	0.380580	21.04442	36.20541580	172.04285714		
Source	DF	Type I SS	Mean Square	F Value	Pr > F	
TRT	4	1610.78247619	402.69561905	0.31	0.8552	
Source	DF	Type III SS	Mean Square	F Value	Pr > F	
TRT	4	1610.78247619	402.69561905	0.31	0.8552	
1	RABBIT DEVELOPMENTAL DATA THYROID HORMONE DATA PROC GLM WITH TUKEYS				12:26 Monday, November 2, 1998	16

----- PREGSTAT=NP -----

## General Linear Models Procedure

Dependent Variable: T4

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	4	1.44928571	0.36232143	0.51	0.7441
Error	2	1.41540000	0.70770000		
Corrected Total	6	2.86468571			
	R-Square	C.V.	Root MSE	T4 Mean	
	0.505914	55.03499	0.84124907	1.52857143	

Source	DF	Type I SS	Mean Square	F Value	Pr > F
TRT	4	1.44928571	0.36232143	0.51	0.7441
Source	DF	Type III SS	Mean Square	F Value	Pr > F
TRT	4	1.44928571	0.36232143	0.51	0.7441

1 RABBIT DEVELOPMENTAL DATA THYROID HORMONE DATA  
PROC GLM WITH TUKEYS 12:26 Monday, November 2, 1998 17

----- PREGSTAT=NP -----

## General Linear Models Procedure

Dependent Variable: TSH

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	4	0.34670476	0.08667619	0.58	0.7126
Error	2	0.30006667	0.15003333		
Corrected Total	6	0.64677143			

	R-Square	C.V.	Root MSE	TSH Mean
	0.536055	20.87290	0.38734137	1.85571429
Source	DF	Type I SS	Mean Square	F Value
TRT	4	0.34670476	0.08667619	0.58
Source	DF	Type III SS	Mean Square	F Value
TRT	4	0.34670476	0.08667619	0.58

1 RABBIT DEVELOPMENTAL DATA THYROID HORMONE DATA 12:26 Monday, November 2, 1998 18  
PROC GLM WITH TUKEYS

----- PREGSTAT=NP -----

#### General Linear Models Procedure

Duncan's Multiple Range Test for variable: T3

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha= 0.05 df= 2 MSE= 1310.832

WARNING: Cell sizes are not equal.

Harmonic Mean of cell sizes= 1.153846

Number of Means	2	3	4	5
Critical Range	205.1	205.1	205.1	205.1

Means with the same letter are not significantly different.

Duncan Grouping	Mean	N	TRT
A	182.27	3	1-----Control
A	180.61	1	4--10mg/kg/day
A	179.83	1	2-0.1mg/kg/day
A	153.89	1	6-100mg/kg/day
A	143.17	1	5--30mg/kg/day

1 RABBIT DEVELOPMENTAL DATA THYROID HORMONE DATA 12:26 Monday, November 2, 1998 19  
PROC GLM WITH TUKEYS

----- PREGSTAT=NP -----

#### General Linear Models Procedure

Duncan's Multiple Range Test for variable: T4

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha= 0.05 df= 2 MSE= 0.7077

WARNING: Cell sizes are not equal.

Harmonic Mean of cell sizes= 1.153846

Number of Means	2	3	4	5
Critical Range	4.765	4.765	4.765	4.765

Means with the same letter are not significantly different.

Duncan Grouping	Mean	N	TRT
A	2.290	1	2-0.1mg/kg/day
A	1.920	1	4--10mg/kg/day
A	1.540	3	1-----Control
A	1.010	1	5--30mg/kg/day
A	0.860	1	6-100mg/kg/day

1 RABBIT DEVELOPMENTAL DATA THYROID HORMONE DATA 12:26 Monday, November 2, 1998 20  
PROC GLM WITH TUKEYS

----- PREGSTAT=NP -----

#### General Linear Models Procedure

Duncan's Multiple Range Test for variable: TSH

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha= 0.05 df= 2 MSE= 0.150033

WARNING: Cell sizes are not equal.

Harmonic Mean of cell sizes= 1.153846

Number of Means	2	3	4	5
Critical Range	2.194	2.194	2.194	2.194

Means with the same letter are not significantly different.

Duncan Grouping	Mean	N	TRT
A	2.0700	1	6-100mg/kg/day
A	1.9733	3	1-----Control
A	1.9300	1	4--10mg/kg/day
A	1.6900	1	2-0.1mg/kg/day
A	1.3800	1	5--30mg/kg/day

1 RABBIT DEVELOPMENTAL DATA THYROID HORMONE DATA 12:26 Monday, November 2, 1998 21  
PROC GLM WITH TUKEYS

----- PREGSTAT=P -----

General Linear Models Procedure  
Class Level Information

Class	Levels	Values
TRT	6	1-----Control 2-0.1mg/kg/day 3-1.0mg/kg/day 4--10mg/kg/day 5--30mg/kg/day 6-100mg/kg/day

Number of observations in by group = 143

NOTE: All dependent variable are consistent with respect to the presence or absence of missing values. However only 140 observations can be used in this analysis.

1 RABBIT DEVELOPMENTAL DATA THYROID HORMONE DATA 12:26 Monday, November 2, 1998 22  
PROC GLM WITH TUKEYS

----- PREGSTAT=P -----

#### General Linear Models Procedure

Dependent Variable: T3

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	5	11145.20165145	2229.04033029	1.36	0.2451
Error	134	220332.16360855	1644.26987768		
Corrected Total	139	231477.36526000			
		R-Square	C.V.	Root MSE	T3 Mean
		0.048148	31.97388	40.54959775	126.82100000

Source	DF	Type I SS	Mean Square	F Value	Pr > F
TRT	5	11145.20165145	2229.04033029	1.36	0.2451
Source	DF	Type III SS	Mean Square	F Value	Pr > F
TRT	5	11145.20165145	2229.04033029	1.36	0.2451

1 RABBIT DEVELOPMENTAL DATA THYROID HORMONE DATA 12:26 Monday, November 2, 1998 23  
PROC GLM WITH TUKEYS

----- PREGSTAT=P -----

#### General Linear Models Procedure

Dependent Variable: T4

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	5	12.78142465	2.55628493	5.44	0.0001
Error	134	62.99490392	0.47011122		
Corrected Total	139	75.77632857			
		R-Square	C.V.	Root MSE	T4 Mean
		0.168673	42.87205	0.68564657	1.59928571

Source	DF	Type I SS	Mean Square	F Value	Pr > F
TRT	5	12.78142465	2.55628493	5.44	0.0001
Source	DF	Type III SS	Mean Square	F Value	Pr > F
TRT	5	12.78142465	2.55628493	5.44	0.0001

1 RABBIT DEVELOPMENTAL DATA THYROID HORMONE DATA  
PROC GLM WITH TUKEYS 12:26 Monday, November 2, 1998 24

----- PREGSTAT=P -----

## General Linear Models Procedure

Dependent Variable: TSH

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	5	0.46817832	0.09363566	0.96	0.4429
Error	134	13.02779597	0.09722236		
Corrected Total	139	13.49597429			
R-Square	C.V.	Root MSE	TSH Mean		
0.034690	15.30278	0.31180500	2.03757143		

Source	DF	Type I SS	Mean Square	F Value	Pr > F
TRT	5	0.46817832	0.09363566	0.96	0.4429
Source	DF	Type III SS	Mean Square	F Value	Pr > F
TRT	5	0.46817832	0.09363566	0.96	0.4429

1 RABBIT DEVELOPMENTAL DATA THYROID HORMONE DATA  
PROC GLM WITH TUKEYS 12:26 Monday, November 2, 1998 25

----- PREGSTAT=P -----

## General Linear Models Procedure

Duncan's Multiple Range Test for variable: T3

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha= 0.05 df= 134 MSE= 1644.27  
 WARNING: Cell sizes are not equal.  
 Harmonic Mean of cell sizes= 23.30902

Number of Means 2 3 4 5 6  
 Critical Range 23.49 24.73 25.55 26.15 26.62

Means with the same letter are not significantly different.

Duncan Grouping	Mean	N	TRT
-----------------	------	---	-----

A	138.93	22	1-----Control
A			
B	134.31	24	2-0.1mg/kg/day
B			
B	127.61	24	4--10mg/kg/day
B			
B	126.28	23	6-100mg/kg/day
B			
B	123.89	24	5--30mg/kg/day
B			
B	110.21	23	3-1.0mg/kg/day

1 RABBIT DEVELOPMENTAL DATA THYROID HORMONE DATA 12:26 Monday, November 2, 1998 26  
 PROC GLM WITH TUKEYS

----- PREGSTAT=P -----

#### General Linear Models Procedure

Duncan's Multiple Range Test for variable: T4

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha= 0.05 df= 134 MSE= 0.470111

WARNING: Cell sizes are not equal.

Harmonic Mean of cell sizes= 23.30902

Number of Means	2	3	4	5	6
Critical Range	.3972	.4181	.4320	.4422	.4501

Means with the same letter are not significantly different.

Duncan Grouping	Mean	N	TRT
A	2.0721	24	2-0.1mg/kg/day
A			
A	1.9191	22	1-----Control
B	1.5179	24	4--10mg/kg/day
B			
B	1.4730	23	3-1.0mg/kg/day
B			
B	1.4350	24	5--30mg/kg/day
B			
B	1.1826	23	6-100mg/kg/day

1 RABBIT DEVELOPMENTAL DATA THYROID HORMONE DATA 12:26 Monday, November 2, 1998 27  
 PROC GLM WITH TUKEYS

----- PREGSTAT=P -----

#### General Linear Models Procedure

Duncan's Multiple Range Test for variable: TSH

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha= 0.05 df= 134 MSE= 0.097222  
WARNING: Cell sizes are not equal.  
Harmonic Mean of cell sizes= 23.30902

Number of Means 2 3 4 5 6  
Critical Range .1806 .1901 .1964 .2011 .2047

Means with the same letter are not significantly different.

Duncan Grouping	Mean	N	TRT
A	2.11273	22	1-----Control
A	2.09304	23	6-100mg/kg/day
A	2.05261	23	3-1.0mg/kg/day
A	2.03583	24	2-0.1mg/kg/day
A	2.00250	24	4--10mg/kg/day
A	1.93792	24	5--30mg/kg/day